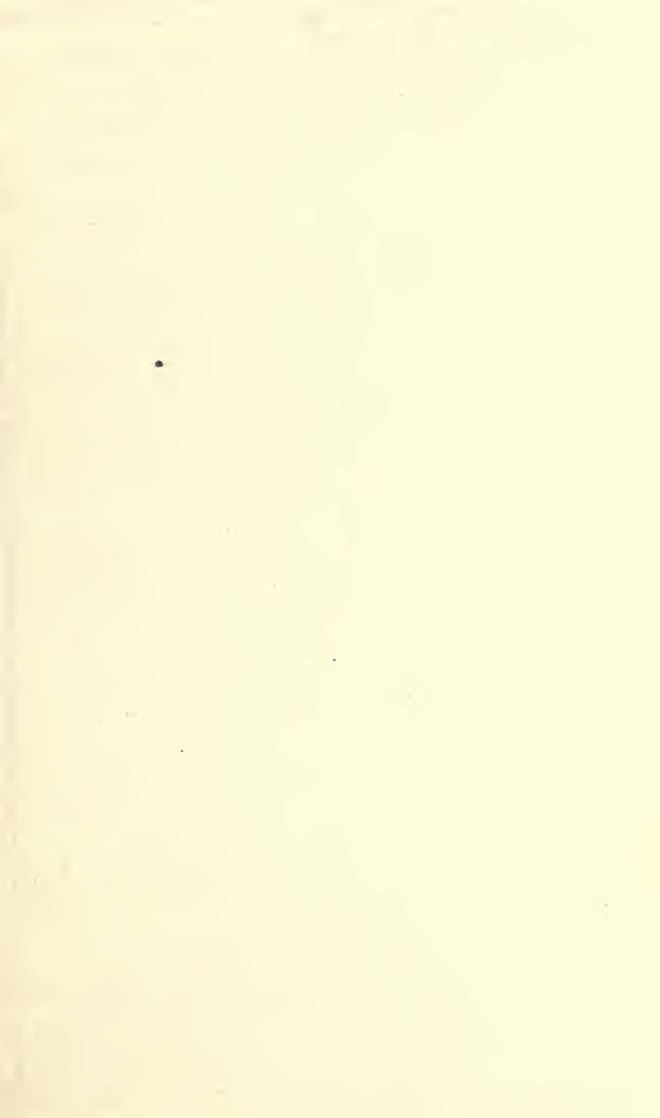


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Fig.1



Fig.2

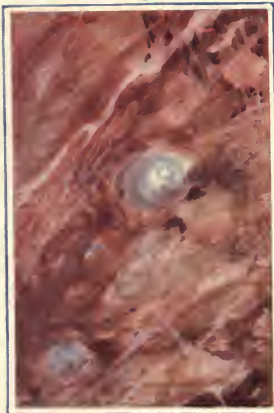


Fig.3



Fig.4

Fig.5

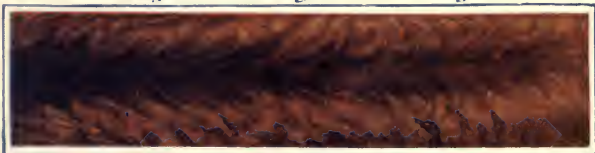


FIG. 1.—BIRD'S EYE MAPLE.

FIG. 2.—POLLARD OAK.

FIG. 3.—ROUGE ROYAL.

FIG. 4.—FEATHERED OR SPANISH MAHOGANY.

FIG. 5.—SIENNA MARBLE.

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INTRODUCTION

THIS little book has been written to enable the young Painter and Decorator to understand the methods and scope of his craft, and it is intended to supplement the information which he picks up in the course of his apprenticeship. The necessity for acquiring a knowledge of underlying principles and a wide range of experience in execution was never greater than it is to-day. The growing practice of inviting tenders for work renders it increasingly difficult to achieve satisfactory artistic results at a price which is likely to secure a contract; and the man whose training enables him to seize at once the artistic possibilities, and to attain them in the most economical way, will not only reap personal advantage, but will have the satisfaction of raising the standard of craftsmanship in his own day.

The various chapters of the book deal with the purpose of painting, the tools, appliances, and materials of the trade, and with the processes adapted to the different kinds of work. It is clearly no more than an introduction to a vast subject, and the student who realises the need for diligent and continued study will make use of the libraries and museums in his own town, and will endeavour to master as many as possible of the books mentioned in the Appendix.

The writer will welcome suggestions for the improvement of a subsequent edition, if the book should find such favour as to call for one.

H. G. D.

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THE reasons for painting! It may seem absurd to those in the trade to give in a text-book the reasons for painting. But how many painters really know the "whys" and "wherefores" connected with the use of the brush? Looked at from the utilitarian standpoint, the principal reasons for painting are preservation and cleanliness, while from the purely æsthetic view, the chief reason is decoration or beautification. In some cases it may be undertaken for one only of the above reasons, but in the majority of instances beautification may supplement cleanliness and preservation.

It is necessary, in order to understand thoroughly the latter reason, to realise the definition of paint as distinct from decoration. Consulting dictionaries will be useless, as the majority of these do not differentiate sufficiently between the meaning of "definition" and "specification."

We generally associate "to preserve" or "to protect" with "covering," and the idea can reasonably be carried to our definition of paint. It is an adhesive and self-hardening film, consisting of particles of solid matter suspended in liquid, which dries on exposure to air and protects the material beneath from atmospheric influences.

Of the ingredients—both pigments and vehicles—more will be said later; it will suffice for the present to understand clearly what paint *does* and *is*. Less difficult is it to define "decoration," which, apart from various influences which must be taken into account, is to beautify, to ornament, or to embellish the object to which it is applied.

Material, method, position, object, and style will, of course, have to be studied, together with the personal tastes of the client, but with these also we shall deal later. It will be

readily seen that a knowledge of the functions of decoration, and the correct application of them, raises the value of the practical painter.

If we glance back into history we find that the early Egyptians embellished the walls of their temples and dwellings with brilliantly-coloured bas-reliefs—the colours used being chiefly the primary ones—the object being principally to record and perpetuate their beliefs and mode of living. Especially did they devote their artistic capabilities to tombs and their furniture, examples of which may be seen in the brilliantly-coloured mummy-cases which are preserved in various museums.

The Assyrians and Persians also, with their richly-coloured tiles and mosaics, enhanced the artistic beauty of the interior and exterior of their palaces, dwellings, and tombs, and have left us a dazzling picture of their vast resources and prosperous civilisation. It is interesting to note, in passing, that the earlier or more primitive the race, the more dominant is the collective racial influence and the weaker is the influence of the individual.

The Greeks, while borrowing much from the Egyptians and Assyrians in form and colouring, seem to have devoted more attention to the arts of sculpture and architecture, and painted decoration seems to have been subservient to these. Practically the only means left to us of forming an estimate of the art of painting among the Greeks are the beautiful designs and decorations on their vases and pottery, the frescoes and wall paintings not having escaped the destructive forces of the elements. Palaces, temples, and tombs were the principal buildings marked out for decoration with the Greeks and Romans, as with the Egyptians, save that the former were inspired by new and different influences.

Decoration, with the Romans, is chiefly known to us by the numerous stucco decorations of the tombs and walls of houses in Rome and the Italian provinces, and also by the numerous frescoes at Pompeii. With the rise of Christian ideas and increased commercial activity, we find the dwelling-house considered more and more as the decorator's chief domain.

Mention has already been made of the influences to be considered by the decorator, and probably the chief of these is "fitness," which contains, in a measure, the essentials of the rest. Suitability to position, purpose, and use are the primary factors of good ornament, and should always be the first consideration of the decorator. Beauty of proportion and refinement of form should also be his concern, and never should ornament be applied merely for the sake of ornamentation.

If one combines a knowledge of æsthetic principles with

a sense of correct application, *e.g.*, obedience to the laws and principles of ornament, such as proportion, spacing, subordination and superposition, repose, harmony, congruity, growth, contrast and unity, etc., an artistic "feeling" will have been acquired that will at once come to the aid of the decorator, and decide as it were, for him, whether his scheme is right or wrong. Another great help will be the study of historic examples of his work and of their chief merits and demerits. He must learn to discriminate carefully between that which is beautiful and that which is not, realising always that unity and variety are probably the chief elements of beauty, and that the greater degree of variety there is, consistent, of course, with unity, the greater will be the beauty.

In deciding on a scheme of decoration, one must consider many things other than those already mentioned. If it be for a room, its use, method of lighting, furniture, size, architectural features and general immediate surroundings will need careful consideration. Some rooms are required to give the feeling of rest and quietness, others, gaiety and motion; some work will constantly be handled, other work protected or beyond reach; while the class of habitués will decide what is required or is most suitable for a public hall—and so on.

Or, again, suppose the fronts of some business houses are being redecorated, then the nature of the business and goods sold must be the determining factor, assuming that the decorator is allowed to decide on the scheme.

An error, commonly mistaken for good taste, is that the more profuse the ornament, and the more elaborate it is, the greater the value from an artistic point of view. Too much stress cannot be laid on the fact that a sense of simplicity is far better than an obtrusive display of ornament. It has been wisely said that "only the most profound can be truly simple," and the great majority of cases where failure and trouble in our artistic labours have ensued, have been through this lack of simplicity. This statement applies with equal force to colour *and* form.

This fact alone, then, should be an incentive to diligent study on the part of the young decorator, the realisation that "Knowledge is Power," and that intellectual effort is necessary to complete success.

It is to be deplored that, in the majority of classes held in the Art Schools and Institutes throughout the country for the trade apprentices, the class for theory is the least attended. Lack of knowledge will often result in a lamentable waste of precious time. "Knowledge, coupled with heart passion, will give hand power," and this is not to be attained instantly. On

the contrary, it will of necessity be a case of ever learning. Not only is artistic knowledge as essential to the decorator as to the artist for the right appreciation of æsthetic principles and recognition of appropriate ornamental elements, but a technical knowledge also is required. It may mean, to the young student, sacrifice of recreation but, assuredly, in proportion to the sacrifice, so much the greater and more permanent will be the ultimate outcome.

One or more of the Trade Journals should be taken in, and a more frequent use should be made of the various Public Libraries. It is the man of knowledge, ability, and initiative that counts to-day. To the young decorator already in business for himself, a word might be said in relation to its successful management. Do not imagine that there is no need of organisation and advertising enterprise. Remember that the best advertisement consists in pleasing your client, and in thorough workmanship. But if, as will often be the case, your client's view on certain matters entirely differs from your own, be cool, polite, never assert your knowledge, but rather freely, and in a dignified manner, offer your customer your advice. Never drive but rather lead him into what *you* know to be the right scheme for the purpose.

Lastly, a word might be said to employer and employé as to cleanliness in work, personal habits, and attire. Contrary to general opinion, painting is one of the healthiest among the building trades. Such danger as there is arises from needless contamination of the hands with the colour; from using tools with unclean handles; the use of finger and thumb nails instead of the knife to remove spots of lead (a habit frequently combined with that of nail-biting); from stopping with white lead; filling by the hands in lieu of a putty knife; and from personal uncleanness. The gravest danger arises from dry rubbing down, but reference will be made to this in Chapter IV.

QUESTIONS BEARING ON CHAPTER I.

1. Why is it usual to paint external woodwork, and in what case would it be unnecessary to do so? When so doing, what are the important points to observe? (1907.)
2. For what ostensible purposes do we paint external woodwork? What precautions must be taken to secure the efficiency of this work? How often must the work be repainted to keep the wood properly protected? (1911.)
3. What are the principal reasons for painting? Give examples for each reason. What do you consider the chief sources of danger to health in the painting trade? State how they can be avoided.
4. What should be some of the deciding factors in determining the scheme for such places as follows :—church, bedroom, library, club-room and children's nursery?

CHAPTER II. OF THE WORKSHOP ♦ TOOLS & APPLIANCES ♦

IN dealing here with the workshop, it must be understood that the size, position, and fixtures are not bound by hard-and-fast rules, but will, of course, depend largely on the proportion and class of business transacted, the space at the employer's disposal, and various other considerations peculiar to individual circumstances. More than one room will be necessary for the proper conduct of an average-sized business workshop, besides a paved and covered yard for the storage of such plant and appliances that need to be kept dry, *e.g.*, ladders, planks, and trestles.

We shall consider each of the rooms separately, dealing first with the workshop proper and its equipment; then with the room that will be needed for shop jobs, and which we will designate the painting room; and lastly with the storage room, where will be stocked the stores and gear described more fully under the heading of "Materials."

First, as to the *Workshop Proper*.

One of a rectangular plan is preferable to a squarer form, a fair size being 18 ft. or 20 ft. long, by 10 ft. or 12 ft. wide. It need hardly be mentioned that it should be on the ground floor and should have double gates—sliding if possible—so as to admit long ladders, trucks, and carts easily. These will be particularly necessary in the case of a shop in a narrow thoroughfare. It should be paved and well drained, have a supply of water, and be such that it can be scrubbed down and cleansed regularly. It should be dry and well lighted, preferably with a north light at the side, while for night-work and the winter months electric light or gas-light will need to be installed. On account of the highly-inflammable nature of the materials kept on the premises, electric light is to be preferred.

Should the painting room be above the shop the ceiling should be either plastered or, better still, match-boarded, so as to prevent any dust coming down and settling on the colours.

The walls may be of brick, board, or plaster, but the surface should be smooth enough to permit of hanging finished cloth, banner writing, etc. Both the ceiling and walls should be white, in order to make the shop lighter.

With regard to the fittings and general equipment, there will be needed a long and strong bench about 3 ft. high and about 3 ft. wide. This should be placed near the light, and ample shelving accommodation should be made above and at the back of it for the storage of the colours in general use for tinting purposes. A very important item on the bench will be a stone, or slab of marble, for grinding and mixing the colours on. Probably more than one will be necessary on the one bench—they should be at least 18 in. square and let into the bench—the rest of the bench being covered with zinc. Accompanying these stones for the actual grinding will be mullers, several sizes of which should be kept (Plate XXXIII. Fig. 20, pp. 148, 149); palette knives, both large and small (Plate II. Fig. 12, pp. 8, 9); and, in a drawer below the stones, cotton-waste or rags for cleaning purposes. The workman, in mixing his colour, should endeavour to keep the stone or marble slab as free as possible from colour. After the grinding he should run the palette knife across the slab and shake or tap the edge of the knife that is free from colour on the stone, cleaning up afterwards with linseed oil and waste.

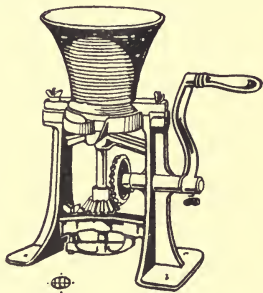


Fig. 1.

In drawers below the bench, tools, pumice-stone, cask-opener, case-opener, and other useful articles might be kept; while underneath the bench should be stored the larger kegs of colours and driers, and empty ones for smudge and old waste, etc. The dry colours should be stored in self-contained compartments and the larger tube colours in pigeon-holes. Several oil-tanks, varying in capacity according to the amount of business transacted, will be required. These will be necessary for linseed oil, "B.O.," turpentine, and turps substitute. Several large boxes for whiting, plaster, cement, etc., and one dust-proof bin for flour must be kept.

In the larger shops a cask is usually kept for "pickling" or cleaning the dirty pots and cans, the "pickle," as it is termed, being made usually of caustic soda and water sufficiently strong to soften and remove the paint. At one end of the bench should be firmly fixed a paint-mill (*see* Fig. 1) for grinding

PLATE II.

- Fig. 1. Galvanised Paint Kettle.
- „ 2. Galvanised Iron Bucket.
- „ 3. Removable Gauze Paint or Distemper Strainer, showing
the Gauze Section (3*a*), the Strainer complete (3*b*), and
- „ 4. Strainer in Pot.
- „ 5. Glaziers' Putty Knife (notched).
- „ 6. Plumbers' Chipping Knife.
- „ 7. Shave-hook with Detachable Heads, as shown in 7*a*.
- „ 8. Painters' Putty or Stopping Knife.
- „ 9. Chisel Knife.
- „ 10. Trowel Stopping Knife.
- „ 11. Paperhangers' Scraper.
- „ 12. Palette Knife.
- „ 13. Steel Dividers, with Setting Screw.
- „ 14. Plumb-bob and Line.
- „ 15. Fourfold Rule.

KNIVES · BUCKETS & POTS.



colour, and in cupboards placed in a dry portion of the shop, glass-paper, size, tubes of better colour, and such articles should be kept. Other conveniences are scales and weighing-machines and a large cask for waste.

The *Painting Room* may be similar in shape to the one already described, but preferably larger, for it is here that jobs are done that can be executed in shop, such as sign-boards, glass facias, stencilled fabrics, etc., etc. Several easels, three-legged trestles, portable benches and a long bench containing drawers will also be found useful. A portable paint slab, similar to those in use in the workshop, with the accompanying knives and muller, a good supply of shelving and cupboards, a heating stove and stools, practically complete the equipment.

As regards lighting, a top light is preferable, with movable electric pendants for night-work, and a water supply will be a decided convenience.

We come next to the *Storage Room*, which will in all probability adjoin the workshop. Here, ample shelving accommodation is a vital necessity, while from the ceiling there should be hooks for suspending buckets, cans, and paint-kettles. It is in this room that the large drums of lead and colour will be kept, and also the brushes and varnishes, so that freedom from damp and good ventilation are imperative. A list is here given of the articles and materials required for a business of medium size:—

$\frac{3}{4}$ ton White Lead.
1 cwt. Patent Driers.
2 bar. Turpentine.
1 „ Boiled Linseed Oil.

1 bar. Linseed Oil.
5 gal. Patent Knotting.
10 „ Terebene.

Colours in Water and Oil.

1 cwt. Burnt Umber in Oil.
1 „ Yellow Ochre „
 $\frac{3}{4}$ „ Venetian Red „
 $\frac{1}{2}$ „ Indian Red „
28 lb. Italian Ochre „
28 „ Raw Sienna „
28 „ Burnt Sienna „
 $\frac{1}{2}$ cwt. Raw Umber „
14 lb. Lemon Chrome „
14 „ Dutch Pink „

14 lb. Deep Yellow Chrome in Oil.
1 cask Vegetable Black „
1 „ Purple Brown „
7 lb. Vandyke Brown „
7 „ B. Sienna in Water.
7 „ R. Umber „
7 „ Vandyke Brown „
7 „ Blue Black „
7 „ Mahogany Lake „

Dry Colours.

	per lb.	s.	d.
1 cwt. Yellow Ochre	.	0	4
14 lb. Burnt Turkey Umber	„	0	8
7 „ Raw Turkey Umber	„	0	6
7 „ Common Ultramarine	„	1	3
14 „ No. 1 Lime Blue	„	0	5
14 „ Drop Ivory Black	„	0	5

	per lb.	s.	d.
4 lb. Super Ultramarine	.	1	8
14 „ Genuine Indian Red	„	0	4
10 „ Permanent Red or Imitation Vermilion	„	2	0
4 lb. Genuine English Vermilion (varies)	„	3	9

Dry Colours—continued.

	S.	D.		S.	D.
1 cwt. Red Lead (varies),			7 lb. Super Brunswick		
28s. per cwt. or . . . per lb.	0	4	Green (Deep)	per lb.	0 4
$\frac{1}{2}$ cwt. Dry White Lead,			7 lb. Super Brunswick		
6os. per cwt. or	"	0 7	Green (Light)	"	0 4
14 lb. Genuine Emerald			7 lb. Bronze Green (Middle)	"	0 4
Green	"	1 4	3 ,, Dutch Pink	"	0 4
			3 ,, Chinese Blue	"	2 6

Standard Tube Colours.

(5 in. \times $1\frac{1}{2}$ in. about $1\frac{1}{3}$ lb. of Flake White and other colour in proportion, according to bulk of contents.)

	S.	D.		S.	D.
Madder Lake	per lb.	12 0	Terre Verte	per lb.	1 9
Cobalt Blue	"	6 0	Crimson Lake	"	7 6
Antwerp Blue	"	1 6			

Note.—Colours ground in Turps and Oil are liable to frequent variation in price.

Special prices are usually quoted for large quantities. Quantities under 7 lb. are often charged 1d. per lb. extra, but are supplied at cut prices if an assorted order of 1 cwt. or over is made up.

Varnish List.

	S.	D.		S.	D.
25 gal. Fine Outside			2 gal. Finest Copal		
Copal Oak Varnish	per gal.	12 0	Varnish for Maple		
25 gal. Fine Outside			work	per gal.	20 0
Oak Varnish	"	12 0	2 gal. Copal Paper		
6 gal. Best Pale Copal			Varnish	"	16 0
Carriage Varnish	"	18 0	4 gal. Super. Black		
6 gal. Best Pale Copal			Japan	"	18 0
Varnish for Front			7 gal. Fine Brunswick		
Doors	"	16 0	Black	"	9 0
25 gal. Fine Hard Drying			10 gal. White Enamel		
Oak Varnish, com-			(varies according to		
monly called "Church			maker)	"	23 0
Oak"	"	14 0	4 gal. Lacquers (Assor-		
5 gal. Copal Flatting			ted).		
Varnish	"	14 0	14 lb. Oil Gold Size . . .	per lb.	7 6
2 gal. White Oil Var-			4 gal. Quick Japan		
nish	"	28 0	Gold Size	per gal.	12 0

Distempers.

1 cwt. Peacock Blue Duresco.		6 cwt. White Duresco.
$1\frac{1}{2}$,, Lemon Yellow ,,		2 ,, Liquid ,,
$1\frac{1}{2}$,, Bright Red ,,		

Sundries (Materials).

1 cwt. Linseed Oil Putty (subject to market fluctuations in price of Linseed Oil).

	S.	D.		S.	D.
1 cwt. best picked Lump			1 ream Oakey's Assorted		
Pumice-stone	per cwt.	32 0	Glass-paper . . . . .	...	20 0
28 lb. Fine Pumice-stone			1 cwt. Cannon's Concen-		
Powder	per lb.	0 3	trated Size (per lb. 8d.)	per cwt.	68 0

Note.—Prices given have in many cases risen considerably since the war.

Sundries (Materials)—continued.

14 lb. Best Glue.	250 Silver Leaf.
1 ton Whiting.	3000 Aluminium Leaf.
4 cwt. Parian Cement.	2 lb. Assorted Bronze Powders.
4 " Portland "	5 cwt. Filling-up Powder.
4 " Plaster of Paris.	10 gal. Paint Remover.
1 " Oil Mastic.	150 Paint Cans.
1 sack Best Rye Flour for Paste.	200 Galvanised Paint Pots. Beaded
28 lb. Litharge.	top edge. (Varied diameters.)
28 " Sugar of Lead.	6 Burning-off Lamps.
500 Best Deep English Gold Leaf	1½ dozen Strainers.
transferred.	1 bale Pitch-papers (Best).
500 Best Deep English Gold Leaf	½ cwt. Laminated Lead.
untransferred.	

A word might be said here as to the management of the workshop, so as to prevent undue waste and loss of materials.

A stock-book should be kept, wherein all goods and plant should be entered, and the entries corrected from time to time; and another in which all plant and materials used should be signed for by the workman before proceeding to the job. By this means, a record is kept as to where the plant is to be found, and the quantities of material used on the job, which will facilitate the work of estimating the cost and also be available for future reference.

In many shops, what are known as requisition forms are in use, and they are usually filled in by the foreman when the stock needs replenishing. As with other trades and callings, the man who hopes to be successful in the decorating trade must have some system of tabulating his stock and output, and also its arrangement. It will be necessary to see that all articles, such as glue, size, brushes, flour, powder colours, sand-paper, cement, etc., are kept in a dry place; that the oil colours are kept under linseed oil; colours ground in turps under turps; water colours under water, to which has been added a small quantity of glycerine; tube colours kept fastened with their screw-caps when not in use; patent driers and white lead under water; that powder colours are protected from dust; that corks are in varnish, knotting, gold size and smaller oil and turps cans, for by so doing an endless amount of time, trouble, and material can be saved.

With regard to the plant: ladders, ranging from 10 ft. to 70 ft. in length, will be necessary. These should be made from sound fir poles, and the rungs made of ash, usually being from 10 in. to 12 in. apart, according to their position in the ladder. The ladder should be strengthened about every dozen rungs by iron rods secured at both ends by nuts or riveted (Fig. 2). A good ladder should be light, possess spring, and be free

from shakes. The length of a ladder is known by its number of rungs; thus we speak of 20-, 30- or 40-rung ladders, and so on. In Diagram (Plate III. Figs. 3 and 8, pp. 14, 15) is shown the correct method of splicing two ladders tied with scaffold ropes, and it should be noted that in using the ladders the lower one should be resting on the top. Many devices for raising and lowering ladders and for preventing slipping at the foot are on the market, but they are looked upon as unnecessary by the majority of men in the trade.

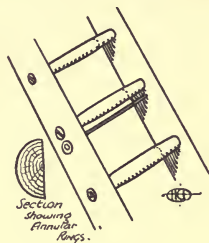


Fig. 2.

The extension ladders, made by several well-known firms, serve well for inside work, being easily manipulated by one man, who can raise or lower them according to the work in hand. Plate III. Fig. 7, pp. 14, 15, illustrates the trestles in general use for outside work and high interior decoration. They are usually made of red deal, and, although the cross-rails are wide apart, yet a considerable range of height is secured by placing the opposite rails in the centre of the rails on the other side. Smaller trestles for paperhangers and portable benches are illustrated in Plate III. Figs. 6 and 9, pp. 14, 15, the main requirements in these being rigidity and compactness.

The type of window bracket commonly used is illustrated in Plate III. Fig. 5, pp. 14, 15. They are used in pairs for platforms in lieu of long ladders for high buildings. Another form of bracket, for ladder use, is that shown in Fig. 4, pp. 14, 15. It can be obtained in various patterns both in iron and wood.

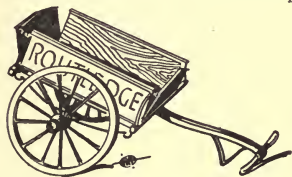


Fig. 3.

Where it is impossible to shift the ladders frequently, as in busy thoroughfares, or where the work is such that the use of ladders is out of the question, painters' cradles are used. These usually consist of planks, suspended by scaffold ropes on pulley blocks, attached to the ends of poles run

out from the roof and manipulated by the men working in the cradle.

The travelling cradle is now extensively used, and is to be preferred, both for handling and convenience, to the old-fashioned painters' boat which, unless manipulated by skilled hands, is extremely dangerous.

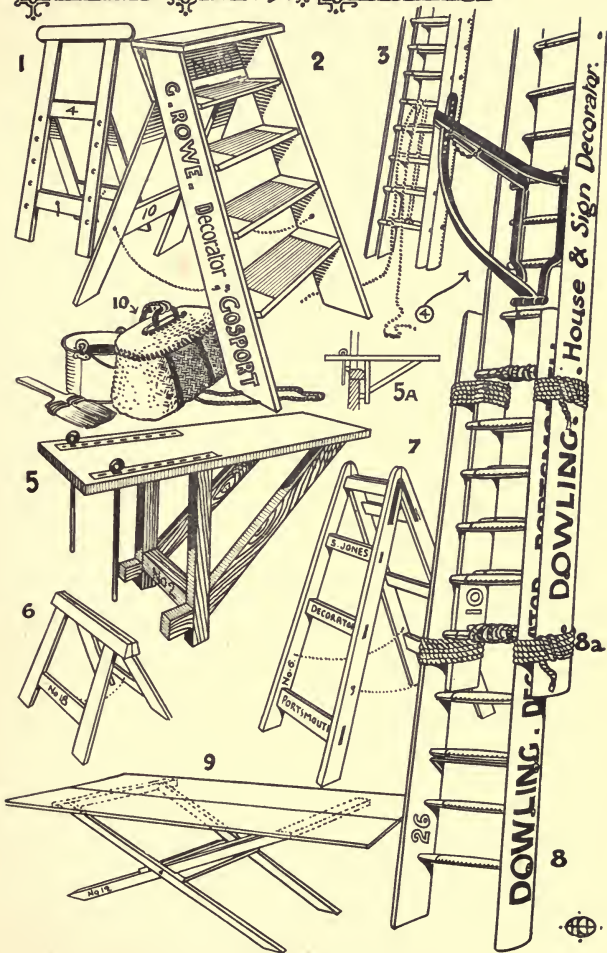
Fig. 3 illustrates the truck in general use, which is lighter in build than those used by builders.

PLATE III.

Fig. 1. Sign-writer's Easel.

- „ 2. Painters' Steps, showing method of Lettering and Numbering.
- „ 3. Method of raising Ladder for Extension Purposes.
- „ 4. Ladder Bracket.
- „ 5. Window Bracket, showing method of fixing in 5a.
- „ 6. Small Portable Folding Trestle.
- „ 7. Portable Trestle, showing Lettering and Numbering.
- „ 8. Two Ladders Spliced, showing in 8a method of Tying Ropes and also showing Numbering and Lettering.
- „ 9. Paperhangers' Folding Trestle and Collapsible Pasteboard.
- „ 10. Painters' Basket.

LADDERS, STEPS and BRACKETS



The decoration of public halls, churches and chapels, staircases, and similar work, will need scaffolding, which is generally entrusted to men who make a speciality of erecting scaffolding. Where the painter has to erect his own, proper attention should be given to the correct method of tying and fixing the ropes, and of placing the poles, in such a way as to ensure safety, for many accidents are due to faulty scaffolding.

Various forms of knots, and methods of fixing ledger and hoisting poles are employed; the poles themselves should be of seasoned fir, straight, light, and sound; the ropes used should be of best tarred hemp, and are sold by weight. Wire ropes are often used, and, although they cost more, are to be preferred in many cases, owing to the comparative ease with which they can be fixed, their superior strength, and freedom from influence by the weather. Too much importance cannot be laid on the great care and forethought which are necessary in scaffolding in order to minimise the danger of accidents. The planks need to be free from knots and should not possess too much spring. The best material is pine or spruce, from 8 ft. to 18 ft. in length, about $1\frac{1}{2}$ in. to 2 in. in thickness, and about 10 in. in width. An item in a painter's kit which is often a source of irritation, worry, and perplexity is the Blow-lamp. These are obtainable in endless variety and range of price. Plate IV. Figs. 1 to 5, pp. 18, 19, illustrate the types in common use, but the writer knows none better than the Burridge Blow-lamp, which burns petrol and is illustrated in Fig. 4.

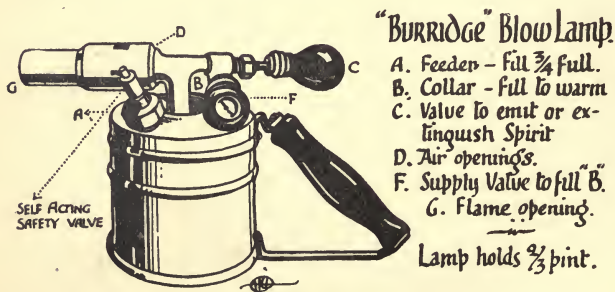


Fig. 4.

In choosing a burning-off lamp, one easily controlled, simple and sound in construction, having parts easily renewable

when worn, is to be preferred to those claiming special patent devices, combined with low cost. Fig. 5 illustrates a charcoal burner, which has been largely superseded by spirit lamps, but which is still used and preferred by some firms.

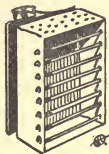


Fig. 5.

Other appliances and materials required are pots and kettles (Plate II. Fig. 1, pp. 8, 9), which should be of galvanised iron or zinc for easy scraping or cleaning; galvanised buckets for distempers and paste (Fig. 2, pp. 8, 9), strainers (Fig. 3, pp. 8, 9) for distemper and paint, those shown in the illustration being better than others, in which the gauze is fixed and immovable. Where the quantity of paint is not large, the 5-in. diameter is recommended for general use, while tins and jars of all descriptions will be required for smaller quantities of colour, and drums or kegs for larger quantities.

There are numerous other articles, such as squares, laths, dust-sheets, palettes, brush-holders, etc., that will be required, but sufficient stock only should be purchased to suit the nature and class of work obtained. It seems hardly necessary here to emphasise the value of due care being taken both of plant and material in order to prevent loss. Trucks, steps, ladders, trestles, and similar articles should be examined periodically, and a rule should be made and enforced that workmen should report immediately any breakage or accident to gear; and during the slack seasons of the year painting, numbering and lettering of plant should be executed.



Painter's Cap
& Long White Jacket.

Fig. 6.

In many shops now, a feature is made of using a distinctive colour for all gear belonging to the business, this serving two purposes: (1) making recognition of all plant easy; (2) advertising the firm's work.

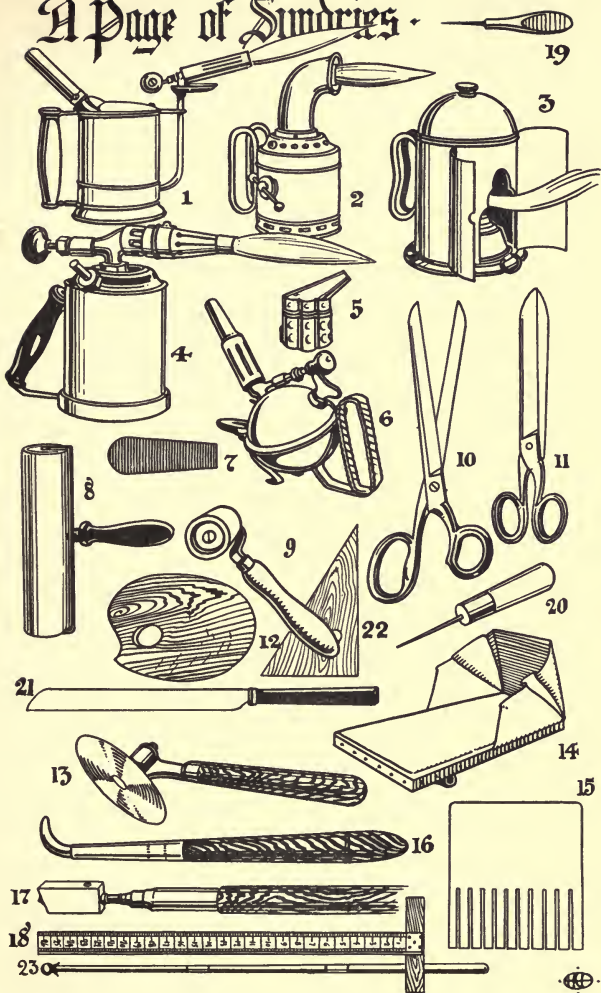
Again, all gear should be kept under cover and cleaned and scrubbed regularly. With regard to the various paints, mention has already been made of prevention of waste from exposure to air, dirt, etc., and it is now only necessary to add that everything should have a place and be kept in it when not in use.

PLATE IV.

Fig. 1. Patent Blow-lamp.

- „ 2. "Pauelin" Burning-off Lamp.
- „ 3. Paint-removing Lamp.
- „ 4. "New" Benzoline Blow-lamp.
- „ 5. Patent Asbestos Wind-guard for "Swedish" Lamps.
- „ 6. "Swedish" Blow-lamp (for Benzoline only, Ball Pattern).
- „ 7. Grainers' Thumb-piece.
- „ 8. Paperhangers' Roller.
- „ 9. Paperhangers' Roller for Angles.
- „ 10. Paperhangers' Scissors. (American Pattern.)
- „ 11. Paperhangers' Scissors.
- „ 12. Palette.
- „ 13. Paperhangers' Rotary Paper Trimmer for use with a
Straight-edge.
- „ 14. Gilders' Cushion.
- „ 15. Graining Comb (sold in sets, Coarse, Medium, and Fine).
- „ 16. Gilders' Agate Burnisher.
- „ 17. Glaziers' Diamond.
- „ 18. Glaziers' "T" Square.
- „ 19. Steel Stencil Pin.
- „ 20. Stencil Pin in Wooden Handle.
- „ 21. Gilders' Knife.
- „ 22. Set Square (60°).
- „ 23. Sign-writer's Jointed Mahlstick.

A Page of Sundries.



In the purchasing of stock, it will be found far more satisfactory to deal with one or two well-known firms rather than with a number of smaller firms offering cheaper and perhaps less dependable goods.

QUESTIONS BEARING ON CHAPTER II.

1. What machinery is used by the painting and kindred trades? Describe one mechanical tool and give your opinion of it. (1909.)
2. Show by sketches the following tools, and describe briefly their uses:—burning - off lamp, paint - kettle, stopping knife, and knotting jar or bottle.
3. Describe briefly the usual equipment of a decorator's workshop. When and why are dust-sheets used, and illustrate by a rough sketch painter's white jacket.
4. Write a brief description, illustrating your answer by sketches, of a painter's ladder and the method of tying ladders together for extension purposes.



WITHOUT doubt the painter's chief tool is the brush, in one form or other, and in view of this fact, it is important to obtain as much knowledge as possible of the capabilities and characteristics of the various hairs and bristles used in brush manufacture, in order to derive the greatest benefit from their use.

Nothing so easily stamps a workman as good or bad as the brushes he uses and the manner in which he treats them. It is discouraging to see how unclean some workmen are with this all-important tool ; and it is the case more often than not that bad work is caused by the workman's slovenly neglect of his brush.

It is suicidal for a master, who hopes to succeed in his business, to serve out to his workmen second-rate brushes, for probably in no other trade does so much depend upon one kind of tool. It is said that a good workman can work with anything, but the adage is certainly wrong when applied to painters' brushes, for the *best* only are the cheapest in the long run. One writer has correctly said that "the difference in cost between a good and a bad brush is often made up in less than a day by quicker and better work." Therefore, for the sake of economy alone, only the best brushes should be used.

The various kinds of material used in the manufacture of painting brushes may be grouped under three heads :—

1. The hog-hair bristle (varying in quality).
2. Its substitute, the horse-hair bristle, technically known as black bristle.
3. Grasses and fibres, which make the least satisfactory of all brushes.

Our chief supply of the best hog-hair bristle comes from Russia and Siberia, where the wild boar is found in large numbers. China, which supplies black bristles only, is next

PLATE V.

- Fig. 1. Metal-bound Flat Oval Ground Brush.
- „ 2. One-knot Copper-bound Ground Brush.
- „ 3. Wire-bound Varnish Brush.
- „ 4. Copper Bridle and Band Varnish Brush.
- „ 5. Copper-bound Sash Tool.
- „ 6. German Sash Tool.
- „ 7. String-bound Sash Tool.
- „ 8. Round Ground Brush.
- „ 9. Flat Varnish Brush, White Hog-hair.
- „ 10. Flat Varnish Brush (in tin), Black Bristle.
- „ 11. Flat Varnish Brush (in tin), White Hog-hair.
- „ 12. Jamb Dusting Brush, Black Bristles.
- „ 13. Round Dusting Brush.
- „ 14. Tar Brush.
- „ 15. Round Limer (Turk's Head).
- „ 16. String-bound Stencil Brush.

GROUND BRUSHES & OTHERS.



in importance, while smaller quantities of bristles come from America, India, Austria, and Germany.

Bristles are classified according to their length, colour, and stiffness, those that are longest and stiffest being dear, while those that are white in colour, besides being long and stiff, are still more expensive. These are named "Lily Bristles," but though they cost more, their quality may not be in any way superior to that of black, yellow, or grey bristles.

They reach this country, packed in casks holding anything from 3 cwt. to 6 cwt., and are already partially dressed and sorted into bundles containing various lengths and colours. It is quite possible to tell from what part of the globe the bristles have come by the manner in which the bundles are tied, those coming from Siberia, for example, being tied differently from those from Poland.

Probably the chief characteristic of the bristle, which also serves as a test, is, that the true bristle tapers from the root to the end, and has the tendency to split at the ends; and it is due to this peculiarity that the brush becomes better to use the longer it is in wear. Although the sides of the bristle appear smooth, in reality they are somewhat serrated after the manner of a saw. This may be proved by rubbing a bristle between the thumb and finger, when the bristle will move easily towards the larger end and never towards the "flag," or split end. Another marked characteristic of bristles is that they are bent or bow-shaped and none are perfectly straight. On being made up into a brush the bristles are so arranged that they fold over one another and curve toward the centre.

The next most frequently employed material for brush-making is horse-hair. It possesses none of the excellent qualities of bristles, the chief reason for its use being its low cost. England supplies the best quality of this commodity, but it is also obtained from Russia, Australia, China, and Germany. Horse-hairs neither split nor taper, and "work" far differently from true bristles. They are far softer than bristles, and, owing to their being procurable in long "drafts," or bundles, they are often mixed with bristles, especially to fill up the deficiencies in the longer bristles.

Besides bristles and horse-hair the hair of several other animals are used in making painters' brushes. Among these are the hair of the badger, used chiefly, on account of softness, for gilders' brushes; tails of sables and squirrels; and hair from parts of the ox and bear. Other materials used for brush-making are various vegetable fibres from Manila, Ceylon, and Brazil. Steel wire brushes are employed for cleaning rust from metal surfaces.

As has already been stated, bristles arrive in this country

arranged in bundles, and it is the business of the brush-maker to sort, blend, and dress them according to the required length, colour, and stiffness of the brush to be made. They are sorted into the various "stiffnesses" on a bench filled with a series of steel combs, the teeth of which are graded, and after this process they are sorted into "lengths" (a process known as "dragging"), by being held against a "size-stick," marked with inches and parts of an inch, those bristles that are too short being removed gently with the thumb and finger.

Another important process is "washing," which needs a great deal of experience. The bristles are laid, layer upon layer, in a large tub containing vent pegs and pieces of soap, and boiling water is poured upon them. They are then taken, a handful at a time, and rubbed or "ground" on a stone slab, about 12 in. square, well lathered with soap, and after this laid on racks in the drying-room.

When bristles have to be bleached they are placed on racks in a special room, and, after all doors and windows have been closed, an iron crucible is placed on the floor, made red-hot, and pieces of sulphur thrown in. The fumes gradually destroy the colouring matter in the bristles.

There are four classes of brush-binding, known as machine work, painters' brushes, drawn work, and set work, while painting brushes are subdivided into artists' brushes and those for painters and decorators.

Brief mention has been made as to tests for various adulterants, and besides these may be noted the following:—

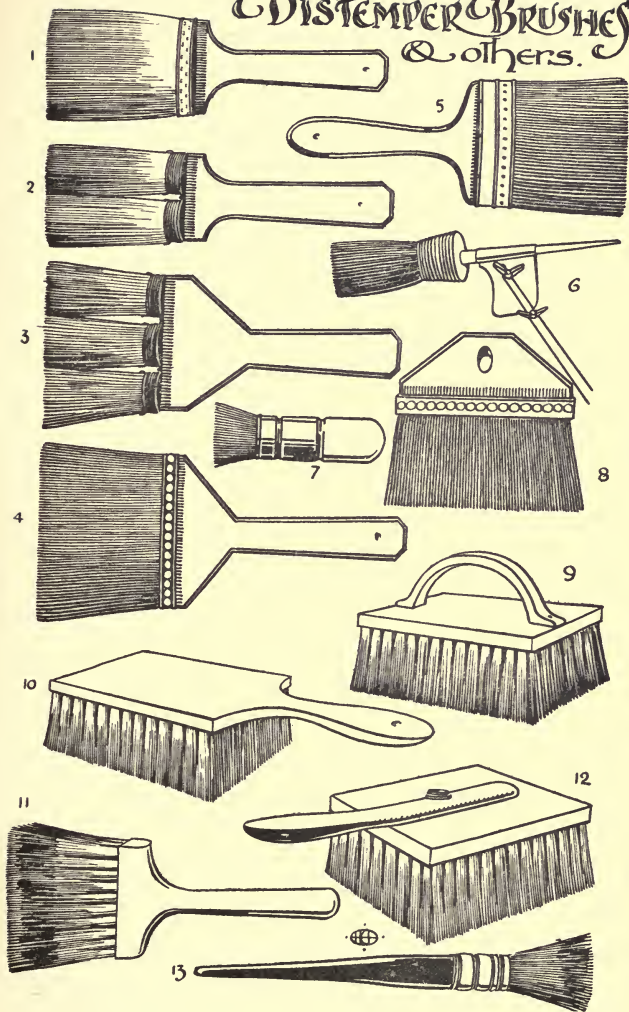
1. Great flexibility and spring in the bristle as compared with the hair or fibre.
2. The split end or flag which exists in the bristle and which is absent in the hair.
3. The tapering from root to flag as compared with the parallel sides of the horse-hair.
4. The best test of all is the microscopic one, the bristle appearing elliptical in section, while that of the horse-hair is cylindrical.
5. There is also the burning test. The fibre when lighted burns freely, while the bristle will only splutter and emit an offensive odour.

On Plates V., pp. 22, 23; VI., pp. 26, 27; and VII., pp. 30, 31, are illustrated various kinds of brushes used in the trade. Those on Plate VII. illustrate brushes used by grainers and writers; on Plate V., pp. 22, 23, ground brushes and stencilling tools, and on Plate VI., pp. 26, 27, distemper brushes, stipplers and badger softeners. We will take the leading types and speak briefly of each.

PLATE VI.

- Fig. 1. Copper-band Distemper Brush.
- „ 2. Copper-wire-bound two-knot Distemper Brush.
- „ 3. Copper-wire-bound three-knot Distemper Brush.
- „ 4. Nailed Stock Leather-bound Distemper Brush.
- „ 5. Brass-bound Wall Brush.
- „ 6. “Man-help” (for use where work from ladder or steps cannot be reached easily).
- „ 7. Metal-bound Stencil Brush.
- „ 8. Flat Limer-head.
- „ 9. Stippling Brush with Bridge Handle.
- „ 10. Stippling Brush with Handle at end.
- „ 11. Badger Softener.
- „ 12. Stippling Brush with Reversible Handle.
- „ 13. Round Badger Softener, Quill-bound.

DISTEMPER BRUSHES & others.



Paint and ground brushes (illustrated on Plate V. Figs. 1, 2, 3, and 4, pp. 22, 23) are round or oval, and are either bound with twine or patent metal ferrules, and are distinguished by numbers and weight, 1-8, 4/0 being the size most in use. The flat, or oval, brushes are now most used, and in many cases are sent out already bevelled, but it is far better for the practical workman to work his own brush in. Figs. 5, 6, 7 illustrate various sash tools in use, Fig. 7 illustrating the fork pattern tool.

On Plate VII. Fig. 24, pp. 30, 31, is shown a quilled tool, and it is chiefly used for scene painting, while on the same plate (Fig. 6) is illustrated a flat brush, handy for painting sashes, but known also as a "lining fitch." Figs. 9, 10, and 11 on Plate V., pp. 22, 23, show forms of varnish brushes, which are most suitable for flat work, such as panels, while the round forms, like Figs. 3 and 4, pp. 22, 23, are best suited for broad work. Flat varnish brushes are usually cemented in metal cases, and they should never be allowed to stand in water prior to being used, as the water will soften the glue.

Plate V. Figs. 12 and 13, illustrate two forms of dusting brushes. The former, known as a jamb duster, containing black bristles, is made in various sizes, and the latter, known as a socket duster, is very largely used, being bound with galvanised iron or copper wire. Various forms of distemper brushes are shown on Plate VI. Figs. 1 and 5, pp. 26, 27, being known as "one-knot copper-band distemper brushes"; Fig. 4, pp. 26, 27, a nailed stock brush and leather bound; and Figs. 2 and 3, pp. 26, 27, copper-wire-bound distemper brushes, and known as two- and three-knot respectively. Fig. 8, pp. 26, 27, shows a "limer's head," and, as the name implies, is used for lime washing. Wash-off and lime-white brushes are similar in size and form to those used for distemping, but are made usually from vegetable fibre or coarser hair.

Another form of brush which is of great value to the painter is that shown in Figs. 9, 10, and 12, pp. 26, 27. These are called "stipplers," and require great care and attention in their use. They are chiefly employed for removing brush marks, either in distemper or paint, in order to produce an even surface. Fig. 9, pp. 26, 27, illustrates the form usually preferred, as it permits of overhead work being more easily carried out, while the reversible handle, as shown in Fig. 12, pp. 26, 27, is also popular, although dearer in the first instance. All can be obtained in sizes varying from 9 in. \times 7 in. to 4 in. \times 3 in.

Two forms of softeners are shown in Figs. 11 and 13, pp. 26, 27. These are made of hair obtained from the badger, and besides being used for certain decorative processes are also used for fine stippling and "softening" brush marks in paint. On

Plate VII., pp. 30, 31, are shown various tools used by grainers and writers, a description of the uses to which they are put being found in chapters dealing with graining and sign-writing. Fig. 18, pp. 30, 31, shows a brush used by paperhangers, and Fig. 27, pp. 30, 31, a small brush known as a "gilders' tip." Nothing, as has been stated, so readily "gives a man away" as the way he treats his brushes, and a word might be said here regarding care in handling them.

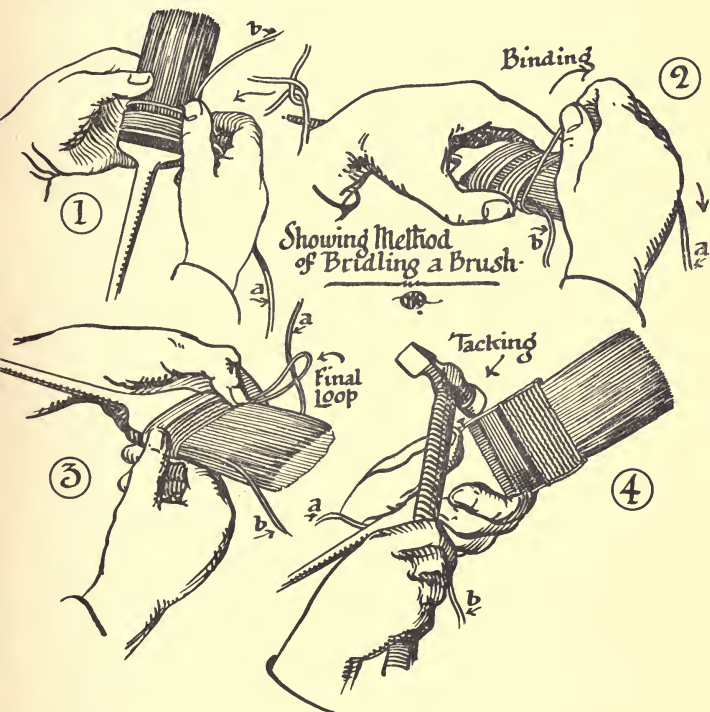


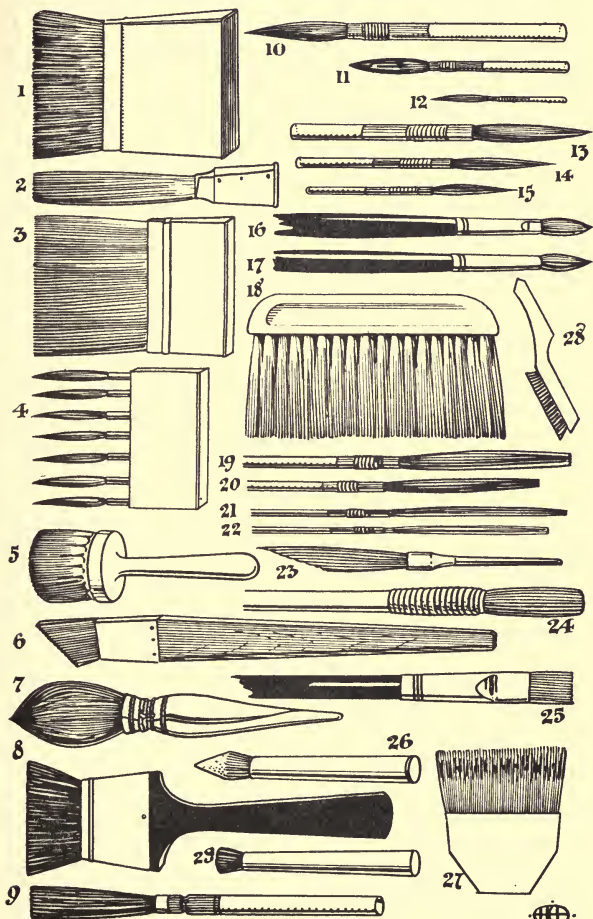
Fig. 7.

Before new painters' brushes are used they are "bridled" or tied up to reduce the working length of the bristles, the bridle being adapted after the bristles shorten. There are several ways of handling a brush, the following being a brief description of that adopted by the writer, and illustrated in Fig. 7.

PLATE VII.

- Fig. 1. Camel-hair Hog-hair Mottler in tin.
 „ 2. Thin Hog-hair Overgrainer in tin.
 „ 3. Hog-hair Mottler in tin.
 „ 4. Pencil Overgrainer (obtainable with either regular or
 irregular spacing of pencils).
 „ 5. Graining Brush.
 „ 6. Flat Hog-hair Lining Tool in tin.
 „ 7. Camel-hair Gilders' Dab or Mop in Quill.
 „ 8. Flat Camel-hair Brush in tin.
 „ 9. Camel-hair Swan Quill (flat top).
 „ 10. Goose Sable Writer in Quill ("Riggers").
 „ 11. Duck Sable Writer in Quill.
 „ 12. Crow Sable Writer in Quill.
 „ 13. Goose Sable Writer in Quill (extra long).
 „ 14. Duck Sable Writer in Quill (extra long).
 „ 15. Crow Sable Writer in Quill (extra long).
 „ 16. Flat Sable Water-colour Brush, in Albata.
 „ 17. Round Sable Water-colour Brush, in Albata.
 „ 18. Short-handled Paperhangers' Smoothing Brush.
 „ 19. Goose Ox-hair Lining Pencil in Quill.
 „ 20. Duck Ox-hair Lining Pencil in Quill.
 „ 21. Duck Ox-hair Lining Pencil in Quill (extra long).
 „ 22. Crow Ox-hair Lining Pencil in Quill (extra long).
 „ 23. Camel-hair Sword Stripe.
 „ 24. Quilled Hog-hair Tool.
 „ 25. Hog-hair Tools or Fitches.
 „ 26. Round Hog-hair Maple-eye Shader.
 „ 27. Gilders' Card Tip.
 „ 28. Brick Liner.
 „ 29. Camel-hair Maple Dotter.

GRAINERS' BRUSHES & OTHERS.



Take about 3 yd. of medium twine, and make a half-hitch knot at the top of the stock of the brush, as shown in Diagram 1, and on the top side, leaving one end on the side of the brush.

Proceed to coil the string round the brush, taking in the end on side about $1\frac{1}{2}$ in. up the side. Return the string over the finger, and bring the other end through the loop made. Finish by bringing both ends down to the stock and turn round tacks (Fig. 8).

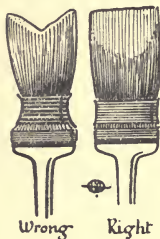
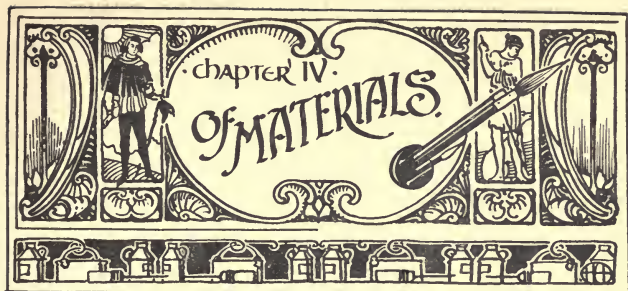


Fig. 8.

Several ready-made bridles of zinc, string, and leather are on the market. Brushes bound in string only should be soaked in water previous to being used, as those set in cement or glue would become loose on the softening of the cement by the water. Brushes used in paint should be stood or suspended in water when not in use, and varnish brushes in linseed oil; stippler and badger softeners, after being thoroughly cleaned, should be suspended, so that the hair hangs down to avoid crippling; sable pencils should be greased with tallow and brought to a point. New brushes should be tied in bundles, hung from the ceiling of the stock-room, covered up with paper, and protected from moths by the use of camphor or insect powder. A well-ventilated room is to be preferred.

QUESTIONS BEARING ON CHAPTER III.

1. Of what hair, etc., are painters' brushes made? In what manner will washing affect them, if (a) the water is too hot; or (b) too much alkali has been added to it? (1912.)
2. How would you test a new paint brush for quality? When an apparently good brush develops a twist, what is usually the cause? Give general directions for the care of brushes during periods when not actually in use. (1912.)
3. Describe the preparation for, and roughly sketch the process of, bridling brushes and tools before using in oil colour, and state your reason for so doing. (1907.)
4. Name six kinds of brushes used in the trade, and describe each briefly in not more than twenty words. (1907.)



FULL description of all materials used by the decorator will not be found here, but the student is advised to consult the various books mentioned in the list of Reference Books given in Appendix III. Brief mention is only made here of the chief quantities of the principal materials.

The chief material used by the painter is white lead, this being the base from which all tints in oil are prepared. It is a mixture of lead carbonate and lead hydrate in the rough proportion of 3 : 1, the former imparting the colour and body, and the latter giving it its working qualities. It is prepared both in paste and powder. The paste form contains about 10 per cent. of pure linseed oil, and is usually stored in a cask and kept under a layer of water to prevent hardening.

There are various methods of manufacturing this commodity, the most usual being the old Dutch stack process, a description of which is given, the Bischof method, and the Hannay process.

In the Dutch method (adopted in England as early as 1622) sheet lead is cut up, rolled in spirals, placed in pots previously partly filled with dilute acetic acid, and covered with strips of lead. These are then distributed over the floors of specially-constructed sheds or houses, varying in length from 20 ft. to 80 ft. and roughly 15 ft. wide, having no doors or windows, except an opening at one end. Provision is made for various floors to be built up by a series of projecting iron brackets on either side. After the first floor of pots is arranged, a layer of horse-dung or spent tan-bark is placed in, and a second layer of dung is arranged and the next lot of pots placed thereon. Again, another shelf, and so on, until the shed is filled up,

when the end opening is also closed, with the exception of a small hole through which can be watched the process of corrosion. Before long the heat, due to the fermentation of the spent tan or dung, evaporates the acetic acid, which immediately attacks the spiral pieces of lead, while the carbonic acid, released by the fermentation, completes the process of corrosion. The whole process is gradual and lasts from nine to ten weeks. The pots are then removed, shelf by shelf, and the rough, blistered lead or "dross" separated from the smooth laminated lead which is required for white-lead making. It is then washed with water and passed through rollers to separate any unconverted or blue lead. The crust which has been removed is again washed to remove discolorations and to dissolve out the lead acetate, and then again passed through a series of mills, each successive mill grinding it finer. From these mills it is allowed to run into tanks, where, after the discolouring fluid has been removed, it is dried in a drying chamber; and in about twenty-one days the white lead is ready for packing and grinding in oil.

The whole operation is extremely unhealthy, especially during the drying stage of the process, and entails great danger to the women engaged on the work. The high cost of production renders white lead liable to adulteration, the chief adulterant being barytes or sulphate of barium, china clay, and gypsum or sulphate of calcium which, when burnt, forms plaster of Paris.

There are several simple tests to detect adulteration. One is to place some of the lead in a crucible or on a piece of charcoal and direct the flame of a blow-lamp, or gas-jet, against it. If the lead is pure it will be quickly converted into blue lead, which is the metal itself; whereas, should there be any residue, it is impure, the adulterant remaining as a white powder.

Another easy test is to take the white lead and dissolve it in dilute nitric acid. If the white lead is pure it will dissolve entirely, but if adulterated an insoluble substance will remain in suspension. No test, however, is equal to that of *using* white lead; an experienced hand is always able to discover lead of a poor quality. Good white lead should possess great "body" or density, be finely ground and pure in colour.

Owing to the danger attached to its production and use, many commodities have been placed on the market to supersede white lead—the chief being zinc white. The respective merits and demerits of the various pigments have been dilated upon at length in Association meetings and Trade Journals, and the whole question was made the subject of a Government inquiry. Zinc-white pigments are broadly divided into the

hydrate, oxide, and the sulphide, derived from German, Belgian, and Dutch sources. It is also produced by an English manufacturer, Mr J. B. Orr, whose pigment is often known as "Orr's Zinc White"; and The Silicate Paint Company produce the well-known Charlton white. Lithopones are all of foreign origin and inferior to the British products, but are largely imported.

Oxide of zinc is extremely white, and is a very "light" pigment as regards weight, in contrast to its heavy rival, white lead. It also stands well in colour and works well under the brush. Enamels are made with it. Sulphide zinc white is not so white as zinc oxide, but equals white lead in opacity. Zinox, zinc hydrate, chemically combined with oil, has proved superior in every respect.

In regard to the covering powers of the respective whites, the student is advised to test each for himself, a simple and sure test being to paint over an area covered with black and white spots and to note how many coats of the paints in question and the weight of each will be required to hide the spots effectively.

Barytes, another white pigment, is a natural mineral, and though similar in appearance to chalk it is heavier. It is largely used as an adulterant, in white lead, and readily mixes with anything. Barium sulphate is a base for lithopone. The adulterated pigment is cheaper, more bulky, weight for weight, but has smaller covering power than white lead. Flake white, Vienna or Cremnitz white and French white are only various forms of white lead, flake white being, as its name implies, prepared in flakes or scales and made in England; Cremnitz white comes from Cremnitz in Austria, and is not so good as flake white, while French or silver white is very white, and although possessing certain properties of white lead has not so much "body."

The next important item for our consideration is *paint driers*, which are more or less necessary to all colours. They are made in paste, powder, and liquid forms. Paste driers are those most frequently used, and are prepared from boiled linseed oil, litharge, sulphate of zinc, and acetate of lead, the bulk being increased by barytes, and the strength being considerably reduced by this addition. Paste driers should be kept under water, and should not turn to a dark brown colour, but become tough and leather-like in skinning. Litharge, borate of lead, borate of manganese, sugar of lead, oxide of manganese, borate of lime and white vitriol are also driers in use, the first named being largely used in the preparation of varnishes and boiled linseed oil. Liquid zinc drier is recommended for sulphide zinc white.

A liquid drier now in common use is known as *terebene*.

A B C D

J J K L M

R S T U

a b c d e Y

l m n o p

“1904, w x

PLATE VIII.

AN ALPHABET OF ROMAN CAPITALS

with suggestions as to how to construct them. Note the letters such as B, E, F, P, S, etc., which only occupy half of the square. the M being more upright than those of the W. Alternative forms correspond with slope of axis of O.

E F G H I

N Q P O

V W X ^w

Z f g h i j k
q r s t u v
y z & M D C "

PLATE IX.

AND LOWER CASE LETTERS,

which are "wide" or "square" and also the "narrow" letters, Also note the difference between M and W—the outside legs of to W, J, and U are shown. Widest portions of B, C, D, G, Q, etc.,

It is far handier than the paste forms. It should, however, be used very sparingly and only be obtained from a firm of repute, owing to its tendency to cause cracking and discoloration. Power's terebene is reckoned one of the best in the trade.

Japan gold size is another drier which is used for "flat" work and gilding. Driers should be used intelligently and very sparingly and should not be mixed.

Painters' oils mainly comprise raw linseed oil, boiled oil and turpentine, while those in less frequent use are poppy oil, walnut oil, hempseed oil, and oil of lavender. *Linseed oil* is extracted from the seed of the flax plant and is commonly called "raw" oil. When pure it is of a deep golden yellow colour. It dries by oxidisation, readily saponifies, and should smell, if good, like newly-crushed linseed meal or cake.

Boiled linseed oil is raw oil boiled with the addition of lead or manganese, and dries more quickly by oxidisation. It is darker in colour than raw oil. Both oils are often adulterated with soya bean, mineral and resin-oils. *Turpentine*, probably the most important thinner in the trade, is obtained from coniferous trees, such as the pine, fir, and spruce; that which comes from America and France is to be preferred to the Russian spirit. It is colourless, readily evaporates, and has a refreshing and invigorating odour. Turpentine substitutes, usually a mixture of petroleum and spirits of turpentine, or turpentine adulterated with resin or shale spirits, are often used for cheaper work. Pure turpentine may be easily tested by dropping a little on a sheet of white paper, no trace being left after the spirit has evaporated if pure, while the substitute, being of a more oily nature, leaves an oily ring.

Besides the pigments already mentioned (pp. 34, 35), there are others which will be dealt with under the various classes, considering first the *earth colours*, secondly, the *mineral class*, and thirdly, the *vegetable and organic colours*.

The more important earth colours are the *ochres*, e.g., golden ochre, yellow ochre, Oxford ochre, Roman ochre, and spruce yellow—all varieties of yellow earth, although all may be produced artificially. Light red and red ochre is yellow ochre burnt; the better the yellow the better will be the red produced by burning. Raw sienna is also a variety of yellow earth, and is largely found in Northern Italy. It is transparent and is largely used by grainers. After calcination it becomes more transparent and changes to a reddish brown, being then known as burnt sienna.

Another important earth colour is *umber*—a brown earth found in most parts of the world, but especially in England. Turkey umber, found in Cyprus, is usually esteemed as the

best variety, being richer in colour and slightly green in hue. Burnt umber is obtained by burning the raw umber, the resulting colour being pure, transparent, deeper and warmer in shade. The umbers, also, are largely used by grainers, and can be purchased in powder or lump form, or ground in oil or water.

Vandyke brown is another earth colour, and is a form of peaty, bog-earth. It is of a fine rich colour, transparent, stains well, but is a bad drier. It is most reliable when ground in water.

Venetian red was originally prepared from native ochres, but it is now usually artificially prepared. It is deeper in hue than light red, is permanent, and is obtainable in either powder or ground in oil or water.

Indian red contains a larger percentage of iron, is warmer in tone and more purple in hue than either light red or Venetian red.

Terre verte, or green earth, is found in Cyprus and Mount Baldo, near Vienna, and is a siliceous earth, coloured a dull green by 30 per cent. of protoxide of iron.

Mineral colours form a somewhat larger class, and can be further divided into both natural and artificial groups. Dealing with the blue pigments, we have *ultramarine*, obtained from the mineral, lapis-lazuli, a beautifully pure and permanent blue. Owing to its high price it is often replaced by new blue and artificial ultramarine. These range from a bright blue to a green and purple hue.

Cobalt blue, often called cobalt ultramarine, is a rich, bright blue, prepared by calcining a mixture of aluminium and cobalt phosphate at a high temperature.

Prussian blue is the blue most commonly known in the trade, and it also goes by the name of Chinese blue. It is an extremely useful pigment, permanent enough for trade purposes, but must not be mixed with distemper containing lime or whiting, because the lime changes the colour to a dirty brown.

Lime blue is made from copper and sulphate of lime, and can be safely used with lime or whiting distempers.

Amongst greens we have *emerald green*—a chemical compound, containing arsenic, copper, and acetic acid. It is a very poisonous pigment, is fairly permanent, and one of the finest greens produced. Chromate of zinc green is excellent.

Cobalt green, *Venetian*, *verdigris*, *viridian* and *verditer* are greens which are all very useful, but not in general use. A series of greens known to best decorators are the Brunswick greens, obtainable in "light," "middle," and "deep" shades. Other useful greens are Quaker green, "Suffield" green, privet green, and the chrome greens, as well as emerald-tinted green,

PLATE X.

Fig. 1. A Diagram showing the "Skeleton" or Essential Forms of Capitals.

- „ 2. Skeleton or Essential Forms of Lower Case Letters.
- „ 3. Typical Liberties to be deprecated in Lettering—
 - (a) Condensing Letters at expense of Legibility.
 - (b) Looping or Linking of Letters.
 - (c) Combination of Letters.
 - (d) Shortening "Essential" Parts.
- „ 4. Letter showing Blocking or Raised Portion, and also the Cast Shadow, light being above and to the right.
- „ 5. Showing how the Letter O, either Circular or in Elliptical Form, may be used to contract and space the other Letters.
- „ 6. An Incised Letter, if for raised effect dark portion usually below.
- „ 7. Diagram showing some "Structural" Forms, and the dangers of distortion and exaggeration.

A DIAGRAM SHOWING THE "ESSENTIAL" FORMS

Fig.1
A B C D O E E F G H I
J K L M M N N O P
Q R S T U V U W W
X Y Z · 1 2 3 4 5 6 7 8 9

Capitals

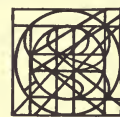
Fig.2
a a b c d e f g h i j k l m n o p q
r s t u v w w x y z or z & & ?

Lower Case

Fig.3
R O U T L E D G E not to be commended O O T E
G W or L M



Fig.5→
*Showing
blocking
to letter
also cast
shadow.*



*Showing how
may be taken to
proportion letters.*

Fig.6.



*The Ellipse
also may
be used
in same
manner*

*Incised
letter.*

B B B B H A A A S S S S
B B B B H A H S S S

*Diagram showing some "structural" forms
and the dangers of distortion or exaggeration.*

Fig.7.



In yellows we have, besides those already mentioned under "earth colours," the *chromes*, varying in colour from a very pale yellow to orange red, and known by the names "pale," "middle," "deep," and "orange" chromes, and which consist mainly of chromic acid in combination with zinc, iron, or lead, the different shades being the result of modifications in the process of manufacture.

They are all fairly permanent, but change sometimes from a greenish hue in the lighter tints to a brown in the deeper ones. Other yellow pigments are Naples yellow, Mars yellow, cadmium yellow. Aureolin vermilion, or *sulphide of mercury*, is one of the principal reds used, and possesses good "body" and covering power. It is a very heavy pigment, and, owing to its high price, is often adulterated. Amongst the cheaper reds are Chinese red, vermilionette, royal red, signal red. Red lead, a fine scarlet pigment, is the cheapest light red and much used, owing to its protective and indestructible qualities. It is obtained by calcining white lead.

Dealing with the third class of pigments, we have *indigo*, a blue colouring matter extracted from the leaves of the plant grown in India. The "lakes," such as madder lake and rose madder, are prepared from the madder root, and are extremely useful for glazing purposes. Brown pink is the yellow colouring matter of French berries. Crimson lake is a deep red with a bluish hue, and was originally prepared from the cochineal insect, but is now mostly obtained from anthracene, a coal-tar product. Efforts are being made to make this in England.

Indian yellow, a bright golden yellow, is obtained from the excrement of camels.

Nearly all the black pigments are derived from animal and vegetable sources, and are very numerous. They are of many hues, ranging from a brown to a blue, and vary in degree of transparency. The most important *blacks* are—vegetable black, prepared from burnt beech-wood; ivory black, the truest black pigment obtainable, a carbon black, which was prepared by charring ivory, but is now mostly manufactured by calcining bones.

Lamp-black is prepared by the combustion of tar oil in an insufficient supply of air, and has a brownish-black hue. It is employed for staining purposes, but must be stored dry. Others are, drop black, Frankfurt black, and charcoal black.

Nearly all the above-mentioned pigments may be obtained in four forms, viz., ground in oil, water, turps, or in lumps or powder.

Varnishes may be divided into two classes: (1) oil varnishes, (2) spirit varnishes. They are used chiefly to give a protective and transparent finish to work, and also to mix with pigments.

They are prepared from various gums, and are classified as carriage varnishes, flatting varnishes, oak varnishes, black japan, and various lacquers. "The use of, and how to handle varnishes" could easily be made a subject of a long treatise, but space only permits a few words on the subject.

Varnishes range in price from 32s. per gal. to 8s. per gal., according to the quality and purpose for which they are required. The best known are the white oil varnishes, used for the highest quality internal work; pale oil varnishes, both hard and elastic, for inside and external work; medium oil varnishes, such as oak and carriage varnishes, made for inside and outside work; and the darker varieties of oak varnish, such as church oak and hard oak.

Flatting varnishes are used for work where a gloss finish is not required, and should be free from beeswax. Paper varnishes are often used for varnishing wall papers, and are very pale in colour.

In selecting varnishes for special classes of work, considerable experience is necessary, and the reader would be well advised to consult the better-class manufacturers. When storing, varnishes should be kept in a cool, but not a very cold, dry place, for dampness is responsible for "blooming."

A good method of testing a varnish for colour is to place a small quantity in a glass tube, and compare with several other varnishes, the qualities of which are known; or to use them upon a flat, white board. To test for elasticity, a good plan is to apply two coats to a piece of parchment paper and, when dry, to fold this backwards and forwards.

Lacquers are used for covering and colouring metallic surfaces, and also as a medium in bronze and aluminium paints.

Patent knotting, made from pure shellac only, dissolved in spirit, is chiefly used to prevent discoloration in oil paint affected by the resin in woodwork.

Black japan is largely used, both for a fine series of stains and also for producing a high finish to woodwork. It should dry in about six hours. For binding distemper, that is, for preventing it from rubbing off or powdering, size or glue is necessary. Glue is obtainable in cake form, and *concentrated size* can be purchased desiccated. Cannon's concentrated size is an excellent article for ordinary purposes, a pound packet being required to make about three gallons of jelly size. It is mixed with cold water first, boiling water being added afterwards.



Fig. 9.

Other materials required by the decorator are whiting for making distemper ; flour for paperhangers' paste ; plasters, such as Keen's cement and plaster of Paris, for stopping for walls, etc. ; putty, made from linseed oil ; whiting for stopping painted woodwork ; glass-paper for smoothing surfaces (Oakey's glass-paper is recommended). Pumice-stone and pumice blocks (Fig. 9) for rubbing down old and new work in water, and pumice powder for felting down varnished and enamelled work, will also be found necessary.

Other materials will be required from time to time for special work.

QUESTIONS BEARING ON CHAPTER IV.

1. State what you know of the origin of linseed oil, and of its uses in the painting trade. (1913.)
2. State briefly the uses and qualities of gold size, boiled oil, raw oil, turpentine, paste driers, and liquid driers. (1907.)
3. State what you know about turpentine ; its origin, specific gravity, flash point, and mixability. (1909.)
4. Name three mineral pigments that are in common use ; state what you know of their origin and trade uses. (1913.)

CHAPTER V. PAINTING & PAINTING GROUND



THE object of this chapter is to describe the general principles which underlie the practice of painting.

Our first consideration is *surface*. It is obvious that some surfaces are less absorbent than others, and therefore require careful consideration as to the composition of the pigment to be applied in painting them. No matter, however, what the surface may be, it is essential that it be perfectly dry, as any moisture between the surface and the paint will be responsible for blistering, heat converting the moisture into vapour, which expands and raises the paint. With work that has already been painted it is necessary either to remove the old paint or to rub it down before repainting. This may be effected in several ways. One method is to "burn off" with a charcoal-lamp or blow-lamp, or to soften it by one of the various caustic-soda preparations or spirituous paint removers, and afterwards to scrape it, or to remove all trace of the soda by treating it with a solution of acetic acid or, in the case of a spirituous paint remover, to rub down with pumice blocks or glass-paper. While damp must be guarded against, so also must dust, and a frequent use should be made of a clean dusting brush.

It may also be taken as a general principle that paint should be less oily as the surface to be painted becomes less absorbent, and the under coats dry more quickly and thus become harder than the upper coats. It should also be borne in mind that paint dries by oxidation and not by evaporation, and that the process is, to a great extent, dependent upon the temperature.

The good workman will always have his own methods of working, but certain practices are common. In redecorating a house the work should be begun at the top, working down on to each floor, leaving the staircase until last, and starting usually from the right. All external work should be begun at the spouting, taking the window frames and doors in due sequence ;

and outside work should be completed before the indoor work is started.

Ceilings should be washed and walls stopped before any painted work is commenced. Dust-sheets must be made use of to cover furniture and fittings from paint and distemper splashes; and, where floors have to be protected, sawdust or brown paper must be used. Step work should be finished first, and, where a plank is in use for ceiling work, the steps should be placed at an angle to the board in order to facilitate getting up and down.

In washing off ceilings or stripping walls, care must be taken to use only sufficient moisture for the purpose, and, where the smell of the paint is objected to by the client, provision must be made to remove it. One method of doing this is to place some hay in a bath of water and leave standing; another method is to throw a handful of juniper berries in a vessel of lighted charcoal, closing all windows, chimneys, etc., for a day.

Care must also be taken not to miss any knots when knotting, fat edges must be avoided, grease must be removed with turpentine or benzoline before painting is begun, and outside work washed down before repainting. The flame of the lamp must be kept turned away from the person at work and inflammable articles when not actually used in removing paint.

Other special methods will be dealt with under various headings in later chapters, but again, emphasis must be placed on the importance of cleanliness, not only in method, but in general habits and workmanship.

The chief uses of oils and turpentine in mixing paint are threefold. The first is to bind together the particles of which the pigments are composed; the second is to give the working consistency under the brush; and the last to impart a particular kind of surface. The fact should never be lost sight of in mixing pigments, that turpentine is a volatile spirit and the largest amount of the spirituous portion of a paint pigment is evaporated; and it is mainly this fact that should make the painter chary of so-called turpentine substitutes. Only a very little turpentine is required in zinc paints.

In new woodwork a greater quantity of oil will be required than of turpentine, and, as the work progresses, the proportion of oil to turpentine should become less, finally giving place to either gold size or varnish if for a "flattening" finish. The initial coat of paint applied to any surface is known as the "priming coat," and it is a very important factor in the successful finish of the following coats. The composition of the "priming coat"



SUGGESTED COLOR SCHEME
FOR
DRAWING ROOM.

will vary, therefore, according to the kind of surface under treatment. The purpose of this coat is mainly to prevent absorption, the remaining coats to fill up, to give body, and to impart finish respectively.

In mixing "colour" a clean paint pot is used and a small quantity of linseed oil poured into it and rinsed round so as partly to cover the sides, and the necessary quantity of white lead and driers then added and beaten into a cream-like consistency with a wooden spatula. Turpentine is then added and finally the tinting colour. The correct way of mixing the tinting colour is to make use of the large palette knife and paint slab, and when dry colours are being prepared the paint muller is used. In no instance must dry or powder colours be added to the pot until they have been thoroughly mixed on the stone. In matching a tint a small quantity only should be made up first, while note is made of the proportions used to obtain the required shade, thus preventing loss of time and waste of material.

Various paint-mixing machines are on the market, the "Wee Macgregor" of Torrance & Sons being especially recommended where a large quantity of colour is required. After paint is mixed it requires straining, either through a piece of muslin or a wire-gauze strainer, as shown in Plate II. Fig. 4, pp. 8, 9. Matching colours requires considerable skill and practice, and the student will be well advised to obtain Mr Seymour Jennings's book on "Paint and Colour Mixing," which deals exhaustively with the subject. The colour to be matched should be examined closely in a good light, and the chief colour in the mixture determined and experiments made with small quantities only on the slab. It must not be forgotten that the colour will vary according to the intensity of the light to which it is exposed. A short list only is given here of various tints and their chief ingredients.

Reds.

Apricot . . .	Middle yellow chrome, vermilion, and a touch of lake.
Bay . . .	Black, Venetian red, and a little orange chrome.
Bronze red . . .	Vermilion, toned down with black and heightened by touch of orange or bright yellow.
Brick red . . .	Venetian red, French ochre, white lead.
Claret . . .	Carmine, ultramarine blue, vermilion.
Flesh tints . . .	White, yellow ochre, vermilion.
" . . .	" Venetian red.
" . . .	" orange chrome, Venetian red.
" . . .	" yellow ochre, burnt sienna.
Light pink . . .	" tinted with vermilion or crimson madder.
Salmon pink . . .	" vermilion, toned down with sienna or ochre.
" . . .	" Venetian red, and touch of chrome yellow.

Magenta . . .	Carmine, vermilion, and small quantity of ultramarine.
Maroon . . .	Venetian red, Indian red, blue black.
Poppy red . . .	Vermilion, orange, or vermilion and touch of blue.
" . . .	Indian yellow, red.
Terra-cotta . . .	Burnt sienna, white lead.
" . . .	Venetian red and touch of chrome or orange.

Yellows.

Biscuit colour . . .	White, ochre, and touch of burnt umber.
Buff . . .	" yellow ochre, middle chrome.
" . . .	" Venetian red, French ochre, touch of umber.
Cream tints . . .	" French ochre, little Venetian red.
" . . .	" Raw sienna, middle chrome.
Gold colour . . .	" yellow ochre, vermilion.
" . . .	" light chrome yellow, ochre and vermilion.
Ivory . . .	" with slight touch of chrome and black.
Light stone . . .	" ochre and touch of Venetian red or umber.
Straw colour . . .	" ochre, middle chrome with touch of umber or black.

Blues.

Bronze blue . . .	Prussian blue, black.
Lavender . . .	White, ultramarine blue, little madder lake or carmine.
Pompeian blue . . .	" " adding little vermilion and ochre.
Slate . . .	" " little black.
Mauve . . .	" " carmine.
" . . .	" blue black, yellow ochre, Venetian red.
Sea blue . . .	" Prussian blue, raw sienna.
" . . .	" indigo and cobalt brown madder, touch of white.
Sky blue . . .	" lead, Prussian blue, cobalt blue.
(Sold as new blue).	
Turquoise blue . . .	" cobalt, emerald green.

Greens.

Apple green . . .	White, middle chrome, green and little orange chrome, yellow.
Bronze green . . .	Black, deep chrome yellow.
Duck's-egg green . . .	Prussian blue, middle chrome yellow, burnt sienna.
Eau-de-nil . . .	White, tinted with middle chrome yellow, emerald green, and little Prussian blue.
Grass green . . .	" deep chrome green and lemon yellow.
Olive " . . .	French ultramarine and ochre.
" " . . .	Light chrome yellow, ultramarine, light Indian red.
Pea " . . .	White lead, chrome green and emerald green.
Sea green . . .	" deep chrome, with touch of Brunswick green, and raw sienna.
Sage green . . .	" chrome, ivory black.
" . . .	" ochre, lamp-black, and Prussian blue.

Browns.

Bronze brown . . .	Black, orange chrome, emerald green.
Brown (a good) . . .	Indian red, lamp-black, French ochre.
Chestnut . . .	Middle chrome yellow, Venetian red, yellow ochre.
Chocolat . . .	Burnt sienna, Vandyke brown, ochre and a touch of black.
Copper . . .	Venetian red, lamp-black, middle chrome yellow.
Drab . . .	White, Indian red, umber, yellow ochre.
Fawn . . .	" " " middle chrome, raw sienna.

Leather brown . . .	White, yellow ochre, Venetian red, blue black.
Nut brown . . .	Vermilion, ochre, black.
Russet . . .	White, raw umber, orange chrome, madder, chrome green.
Tan . . .	„ burnt Turkey umber, orange chrome, French ochre.

Greys, Grays, and Blacks.

NOTE.—The term “grey” should only be used when the pigment is made from black and white; when a colour is added the term “gray” is used.

Warm black . . .	Ivory black, Venetian red, and little Indian red.
Cold „ . . .	„ emerald green, French ochre.
Argent . . .	White, black, vermilion, touch of deep chrome yellow.
Ash gray . . .	„ „ ultramarine blue, touch of burnt sienna.
Dark „ . . .	Black, white, touch of ultramarine or vermilion.
French „ . . .	White, celestial blue, ivory black, touch of Venetian red.
Granite . . .	„ black and ochre.
Lead . . .	„ black, touch of ultramarine.
Pearl gray . . .	Same as above, but lighter.
Silver „ . . .	White, black, ochre, indigo.
Steel „ . . .	„ „ touch of lemon chrome.
Deep slate . . .	Black, Prussian blue, white.

It must be understood that the resulting colours depend on the proportion of the ingredients used, and the student is, therefore, advised to experiment, making notes as to his results. A good and useful thing for future reference is to paint a small portion on a neutral-tinted board and to write carefully at its side the proportion of colours used in its production.

The following is a list of colours suitable for tinting distempers. All should be steeped in water before adding to the soaked whiting, and in no case should dry colours be mixed with the distemper:—

Venetian light and Indian reds.
Various tints of lime blue and green.
Siennas, umbers and ochres.
Blue black, azure, Bremen blue.
Dutch and rose pinks.
Carnation paste.

It should be remembered that distemper dries considerably lighter; it is advisable, therefore, to add only a little of the tinting colours at a time, and to test the mixture on a small piece of paper, to see if the shade is sufficiently deep.

We shall now deal very briefly with some of the common defects in painting, their causes and remedy.

Blistering.—This is the most common defect. It is almost invariably caused by moisture between the various films of paint or on the original surface. This expands with heat, thus causing blisters. Another cause is knots, due to the resin, while un-

PLATE XII.

Set 1. Block Letter with Slight Serifs.

„ 2. Footed Block.

„ 3. Modern Roman.

① A B C D E F G H I J
K L M N O P Q R S
T U V W X Y Z 9

② A B C D E F G H I
J K L M N O P Q
R S T U V W X
1 2 3 4 Y Z 5 6 7 8

③ A B C D E F G H
I J K L M N O P S
Q R T U V W X Z
1 2 3 4 5 6 7 8 9 ☉

seasoned wood may be another cause. Where blistered work has to be repainted, the paint should be burned off.

To prevent paint blistering, attention must be paid to the amount of paint used for the coat, a thick coat often giving trouble, while a sufficient cohesion or key must exist between the various coats. Fat colours must be avoided, also excessive use of oil or driers, and new coats of paint must be laid on over sufficiently dry ones.

Cissing.—This is due to the contraction of varnish, or water upon an impervious or too oily surface. It is peculiarly common in varnishing. The usual method of avoiding the defect is to rub the work down with a damp rag or leather, or with a damp rag and a little whiting.

Ropiness.—This is a term used to express the furrowed or rutted surface in paint, which is usually caused by a too liberal use of thick, podgy colour, or by a heavy handling of the brush. Where this is the case, greater care should be paid in laying off and a lighter use of the brush. Ropiness may also be caused by defective materials but, more often than not, it is due to unskilled workmanship.

Grinning through is applied to colour where a solid finish is intended, but which, owing to either a too thin or transparent colour being applied, or a colour which is too light and far removed from the colour of the surface to be painted, does not cover as was intended. It is usual to bring the work up gradually to the colour required, the under ground always being a few shades deeper than the top.

Cracking is due to a number of causes, but most frequently by the under coats contracting on becoming exposed to heat during the drying process. It must be remembered that the successive coats of either paint or varnish should bear some similarity to each other in respect to their drying powers.

It will be readily seen that if a hard spirit varnish were applied to an oil varnish, cracking would soon occur; and, although the defect would not develop so rapidly if other materials were used, yet the same principle applies to all.

Gritty paint is caused when the colour is not ground finely enough. It is best avoided by buying only from firms of repute, especially where staining colours are concerned.

No highly-finished work can be produced with gritty paint. On the workman's part, clean brushes, pots, and spatula should be used, and the paint should be strained.

Scaling or flaking of paint is due, principally, to lack of cohesion between the various coats or surfaces, but also to the binding agent in the paint becoming destroyed, and by not removing rust or loose bits before repainting. The best remedy

is to burn off or to remove thoroughly all old work before repainting.

Holidays is a term used to denote "skips" or places left out in painting. It is generally caused by scamping or carelessness.

Ladders.—Another fault due to scamping. The term is applied to work missed in laying off, the brush marks laid in one direction showing through when the direction is changed.

Striking or flashing is applied to flat work which dries with an uneven surface, glossy in some parts and flat in others. It is due to a badly prepared surface, wrong colour-mixing, or unskilled workmanship.

In concluding this chapter, mention should be made of the various ready-mixed paints on the market. It is true that within recent years—no doubt partly owing to the demand—ready-mixed paints have considerably improved, owing to modern machinery and other reasons, yet the writer still adheres to the belief that the practical craftsman should mix his own, and suit the paint to the surface.

QUESTIONS BEARING ON CHAPTER V.

1. What pigments would you use to produce the following tints in distemper:—(1) fawn colour; (2) French gray; (3) lavender; (4) pearl gray; (5) old rose; (6) pea green? (1909.)
2. What are the usual causes of blistering in painted work? On what ground does it most frequently occur, and how would you avoid this trouble? (1909.)
3. Give a list of the different kinds of varnishes, and state the purpose for which each is used. What are the precautions necessary when applying varnish? Mention the defects to which varnish is subject, and how to deal with the same. (1907.)
4. A wall that has been painted looks "streaky" and "ropy" in finish; in places the streaks show the under colour through. What faults (*a*) in the paint, (*b*) in the brushes used, (*c*) in the workmen's methods, (*d*) in the foreman's management, would you consider had caused this result? (1911.)



PROBABLY the most important quality in the operative house-painter is appreciation of colour. Although every one who is not colour-blind possesses the sense of colour in some degree, it particularly behoves the decorator to cultivate "an eye for colour," and to be thoroughly conversant with its application to decoration and ornament. Unlike the science student, he is not concerned always with scientific principles in dealing with colour, but rather with the practical and superficial aspect. While individuality, with its varying moods and temperaments, prevents any hard and fast rules being laid down for his guidance, yet there are certain principles connected with this all-important side of his calling that he must master.

Colour is that which gives bodies or substances different appearances to the eye, apart from their form, and is, in the abstract, a sensation or effect produced in the mind by the action of light on the retina of the eye. It is obvious, then, that colour is entirely dependent upon light for its existence, for in complete darkness there is no distinction of colours, while in a dim light all colours appear to resemble each other. Moreover, as colour is a sensation, determined by a set of nerves existing at the back of the eye, it follows that by intelligent practice, study, and observation, the appreciation for colour can be cultivated in common with the other faculties. The white light of the sun is a combination of many colours which can be seen when it is divided by dispersion through the drops of rain and reflected against the cloud, thus giving us the rainbow with its red, orange, yellow, each colour graduating into the other. The outward colour of an object is due to its suppression or absorption of certain of these rays, and is not in the object itself, as is evidenced by the fact that when viewed under artificial light the colour of the object will be influenced by it and altered accordingly. The colour of any object then is dependent on the nature of the light falling upon it, the

nature of the material on which it falls, and the sensitiveness of personal vision. For practical purposes the student may regard red, yellow, and blue as primary or elementary colours. These, when mixed in pairs, give another group of three, viz., orange, green, and purple, called secondary colours. Tertiary

CHROMATIC CIRCLE

- | | |
|-----------------|------------------|
| 1 Red. | 9 Green |
| 2 Crimson. | 10 Yellow Green |
| 3 Blue Crimson. | 11 Green Yellow |
| 4 Purple | 12 Yellow |
| 5 Purple Blue | 13 Yellow Orange |
| 6 Blue | 14 Orange |
| 7 Green Blue | 15 Orange Red |
| 8 Blue Green | 16 Scarlet |

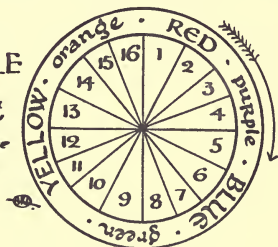


Fig. 10.

colours, citrine, olive, and russet, are obtained by a further mixture of two of the secondaries. We thus get:—

Primary Colours.	{ RED. YELLOW. BLUE.	Secondary Colours.	{ Yellow and Red. } ORANGE.	
			{ Yellow and Blue. } GREEN.	
			{ Blue and Red. } PURPLE.	
Tertiary Colours.	{ Orange. Green. Orange. Violet. Green. Violet.	{ { Yellow. Red. Yellow. Blue. Yellow. Red. Red. Blue. Yellow. Blue. Red. Blue.	{ CITRINE. Contains double amount of yellow.	
			{ OLIVE. Contains double amount of red.	
			{ RUSSET. Contains double amount of blue.	

Fig. 10 will give probably a clearer idea of the above. It will be found of great assistance to the student if he experiments for himself in the mixture of these various groups of colour, taking for his blue cobalt, with a touch of ultramarine

PLATE XIII.

Set 1. Original. .

„ 2. Lower Case Letters for Set 1.

„ 3. Gothic.

A B C D E F G

H I J K L M N

O P Q R S T U

· V W X Y Z ·

①

a b c d e f g h i j k l m n

o p q r s t u v w x y z

②

A B C D E F G

H I J K L M N

O P Q R S T

U V W X Y Z

③

for the middle cadmium, and for his red vermilion, with a touch of rose madder. He should also prepare a chromatic circle or colour chart similar to that shown, taking a radius of the circle about 4 in., dividing the circumference into sixteen parts and placing red and green at opposite divisions. This will prove an easy way of determining complementary colours. Thus, blue finds its complement in orange, yellow in purple, and so on; while if any two colours given in the chart are mixed together, the complementary colour may be obtained by adding together *their* complementaries. Of course the results obtained by the decorator in mixing pigments will be very different from those found by the science student dealing with the colours of the spectrum, which seem almost impossible to obtain by the former. *How* different may be gathered from the fact that the complete scientist's colours, when combined, produce a white light, and those of the decorator, a black or neutral grey! In other words, the student must distinguish between coloured light and pigments. While the study of the scientific side of colour is certainly urged upon the student, stress must here be laid on the importance of a careful study of nature's colourings, whether in landscapes, flowers, shells, leaves, birds, or insects. In each, complete harmonious colouring is found, no matter how strong the contrast. Whether it is the pansy, with its pale yellow band and the orange spot in the centre, or the bright red poppy amongst the corn and grass, or the setting sun on a cold winter's day—everything is in perfectly harmonious colouring. But care must be taken not only to find out what colours nature uses to produce harmony, but the quantity and proportions used, for harmony in colour depends mainly on the right quantities being arranged together as well as the right colours being used, while the harshest contrasts can often be made harmonious by the addition of a note of colour.

There are several terms in use among colourists which need an explanation here. Colours are said to be *warm* or *cold* according to their luminosity or sombreness, and these qualities are usually determined by the amount of red or yellow in the case of warm colours, and blue in the cool or cold colours; *advance* or *retire* according to whether the hue is yellow or grey respectively; *dull* or *bright* according to the purity of tone, the primary colours being brightest, and *light* or *dark* according to the inclination to whiteness or blackness.

The following terms are very often misapplied in designating colours, and have "tripped" many students in examinations:—

Tint is the term applied where white has been added to the principal colour.

Hue is applied to the change produced in a colour by the addition of another which gives it a different "cast," *e.g.*, when red is added to blue, giving it a reddish hue.

Shade is applied when the colour has been darkened by black.

Tone designates the brightness of colours.

Monochrome colouring is that where the scheme in its various portions is carried out in one hue, ranging in depth, *e.g.*, when one hue of green is used in several depths.

Analogous colouring is similar to the foregoing, but occurs only where there is also tone colouring, such as various hues of blue, gradating from blue to purple.

There are several useful hints which are worth remembering by the decorator. A successful colour scheme should possess, in proper proportions, one of the three primary colours, either in purity or in combination. Gold is best outlined with black or dark brown if on a coloured ground, owing to its effect in the light, appearing bright in some lights and dark in others. All colours should be mixed or determined upon wherever they are to be applied and under the same conditions. Colouring harsh in contrast will be helped by an outline of gold, black, or white. In a well-lighted room the colouring should be cool, while in a chilly or badly-lit room it should be warm and "juicy." Remember that in lightening colours the effect is not always to be attained by the addition of white.

The purpose and use of the room, hall, or other apartment should be considered in deciding upon the colour scheme to be adopted. Bedrooms should be treated with pure and cool tints to suggest light; dining-rooms in warm tones; drawing-rooms in delicate tints, such as broken greens, greys, or yellows, which are most effective under artificial light; libraries in sombre and restful colours; cold colouring should be avoided in church decoration, and warm colours are best for a theatre or place of amusement. Soft, quiet colours should be used in the large surfaces, and a note of the brighter colour in the smaller ones. Strive after balance in colour by avoiding one colour in a scheme being too insistent, *e.g.*, by lightening it in tone. Dull colours may be heightened by a touch of their complementaries.

The following rules or propositions as laid down by Owen Jones in his "Grammar of Ornament" in regard to colour, may also be committed to memory and experimented upon:—

1. "When a full colour is contrasted with another of a lower tone, the volume of the latter must be proportionately increased."
2. "When a primary, tinged with another primary, is contrasted with a secondary, the secondary must have a hue of the third primary."

PLATE XIV.

Set 1. Sloped French.

„ 2. Original Fancy Script.

„ 3. Script.

„ 4. Script.

① *A B C D E F G H I*
J K L M N O P Q R S
· T U V W X Y Z ·

② *A B C D E F G H*
I J K L M N O
P Q R S T U ·
· V W X Y Z

③ *A B C D E F G H I ·*
J K L M N O P Q R ·
S T U V W X Y Z Q

④ *A B C D E F G H I*
J K L M N O P Q R
S T U V W X Y Z ⊕

3. "In using the primary colours on moulded surfaces, we should place blue, which retires, on the concave surfaces; yellow, which advances, on the convex; and red, the intermediate colour, on the under sides, separating the colours by white on the vertical planes."
4. "When two tones of the same colour are juxtaposed, the light colour will appear lighter and the dark colour darker."
5. "When two different colours are juxtaposed, they receive a double modification: first, as to their tone (the light colour appearing lighter and the dark colour appearing darker), secondly, as to their hue (each will become tinged with the complementary colour of the other)."
6. "Colours on white grounds appear darker; on black grounds lighter."
7. "When ornaments in a colour are on a ground of a contrasting colour, the ornament should be separated from the ground by an edging of lighter colour."
8. "When ornaments in a colour are on a gold ground, the ornaments should be separated from the ground by an edging of a darker colour."
9. "Ornaments on any colour, or on gold, may be used on white or black grounds without outlining or edging."
10. "Colours should never be allowed to impinge on each other."
11. "The primary colours should be used on the upper portion of objects, the secondary and tertiary on the lower."

The whole of the foregoing remarks not only apply to painted surface work but to selection of wall papers and hangings, and it should be remembered that the room or work in hand must be considered as a whole, and the colour should be in sympathy with the furniture and fittings.

The following are offered as a few simple, suggestive colour treatments only:—

Bedrooms.

1. Ceiling, ivory; frieze, cream; walls, quiet blue; woodwork, white.
2. Ceiling, cream; walls, apple green; woodwork, white.
3. Ceiling, cream; frieze, silver grey; walls, lavender.
4. Ceiling, white; frieze, pale salmon; walls, middle terra-cotta; woodwork, white.

Dining-room.

1. Ceiling and frieze, pale green; filling, warm reddish brown; dado, bronze blue; woodwork, fumed oak.
2. Ceiling, cream; frieze, Eltonbury maize; walls, Pompeian red; woodwork, deep warm brown or fumed oak; door panels, light tan; mouldings, picked out in black.

Drawing-room.

1. Ceiling, ivory ; frieze, salmon colour ; woodwork and panelled dado, deep cream picked out with gold.
2. Ceiling, pale green ; frieze, old gold colour ; filling, light terra-cotta ; dado, slate blue ; woodwork, rich brown, enriched with black and pale bluish green lining.

Library or Study.

1. Ceiling, pale blue ; frieze, dark buff ; walls, dark Pompeian red ; woodwork, dark fumed oak.
2. Ceiling, smoke grey ; frieze, light tan colour ; walls, deep warm blue ; woodwork, dark brown.

Hall.

Ceiling, white ; frieze, light buff ; filling, bright slate colour ; dado, russet ; woodwork, deep bronze green.

Church Decoration.

1. Ceiling panels, azure blue ; walls, warm buff ; dado, deep bronze green.
2. Ceiling panels, duck's-egg green ; walls, russet ; dado, deep Pompeian red.
3. Ceiling panels, deep cream ; walls, maize colour ; dado, a slaty blue.

Finally, the student is again reminded that general colour should come before local brilliance ; good colouring is warm without being hot ; grey or pearly, yet not cold ; luminous, but not necessarily gaudy or showy ; telling, without being insistent, and that no colour scheme can be counted good which does not take into account the whole surroundings and conditions.

PLATE XV.

Set 1. Tudor.

„ 2. Lower Case Letters for Set 1.

„ 3. Church Text.

A B C D E F G

H I J K L M N

O P Q R S T U

① · V W X Y Z ·

a b c d e f g h i j k l m n o

② · p q r s t u v w x y z ·

A B C D E F G

H I J K L M N

O P Q R S T U

③ · V W X Y Z ·

QUESTIONS BEARING ON CHAPTER VI.

1. Select two colours for painting the woodwork of a dining-room, and describe them as exactly as you can by name and by a written description, and state the pigments you would use to make them from. The colours are to contrast with each other, and be complementary to that of the wall paper and carpet. The colour of the paper is a brownish scarlet madder tone. The carpet is a turkey red and deep blue of the usual typical colouring. (1911.)
2. If deep vermilion, yellow chrome, and cobalt blue were mixed together in equal proportions, what colour would be the result? If each of the three were in turn allowed to predominate in the mixture, how would you describe the three results? (1909.)
3. What do you understand by the terms (*a*) monochrome, (*b*) broken colour, (*c*) advancing and retiring colours, (*d*) simultaneous contrast? (1913.)
4. What are the principal colours of the spectrum, and in what order are they usually seen in a rainbow or spectrum? Write the names in order in column form, and on the same line as each write the name of the pigment or paints you would use to match it. (1912.)



MANY interesting accounts of the history of wall hangings are extant, and they are very profitable to the decorator desirous of becoming acquainted with the lighter side of his calling. It is, perhaps, useful to remember that wall papers are intended as imitations or substitutes for the stamped leather, tapestry, or other textile hangings, and did not come into general use until the eighteenth century, the abolition of the paper duty in 1861 largely helping to increase the output and their popularity. Before 1860, wall papers were all printed by hand from wood blocks, often in conjunction with hand stencils, not in rolls as we now have them, but in squares, and were, in consequence, extremely difficult to hang, the wall surface showing innumerable joins; and, although the advent of the continuous roll came with the improvements and development of machinery, blocks are still used in the hand-printed varieties for printing purposes. One block is used for each tint, the outline being obtained by flat brass wire inserted edgewise into the block, and each colour being printed separately on a length of paper 21 in. wide and 12 yd. long, the blocks usually being 21 in. square. English wall papers are made in 12-yd. lengths, and 22 in. wide, 21 in. when trimmed, and occupy an area of 63 sq. ft. or 7 sq. yd.

French wall papers are 9 yd. long and 18 in. in width, and Japanese leathers are usually 12 yd. long and 36 in. wide.

Friezes or borders, a still later development of paper as mural decoration, are made in many widths, but the 5-in., 7-in., 9-in., 10½-in., 18-in., and 21-in. are usual varieties stocked. There are many kinds of wall papers made, ranging in price from 2½d. to 50 or 60 shillings per piece, and the reader is advised to obtain a good class pattern book and compare the various varieties given therein, carefully noting the difference in texture, printing, and finish. There are two large groups, however, "machines," that is *all* papers printed by machinery, and "hand-

PLATE XVI.

Fig. 1. Suggestion for Decorative Sign - board with Painted Ornament.

„ 2. Bordered Sign-board (Border could be Stencilled).

„ 3. Suggestion for Ornamental Sign - board with Stencilled Repeat Ornament.

„ 4. Sign-board Suggestion, showing Treatment of Ground.

Sign Board Suggestions:-



printed papers," those printed from blocks or stencilling. A brief description only of the leading varieties is here given.

Pulps are the commonest class of wall papers made, and consist of the pattern printed direct on to the plain and natural surface of the paper itself, the colour of which serves either as ornament or background.

Satins are papers having a smoothly polished or glazed ground, which is produced by the application of fine French chalk, and polished by rotary machine brushes.

Micas or *Satinettes* are papers in which the ground is treated with powdered talc or mica to produce a sheeny or iridescent surface.

Sanitary papers are those printed in oil colour on a sized ground, and permit of a certain amount of washing.

Ingrains are self-coloured papers, having a somewhat rough surface, produced by the introduction of fibre or hair-flock with the pulp during the process of paper making, and, in the cheaper varieties, are very liable to lose their colour.

Flocks are papers in which the pattern is printed in some adhesive substance, such as gold size, and then dusted or sprinkled with silk powdering, hair-flock, or finely ground wool or cloth, being often treated several times to produce a relief effect, the depth varying according to the treatment.

Metal papers, now not largely used, are those in which the ground or pattern is printed with various bronzes, ranging from gold to copper. Metal and imitation gold, if not of good quality, easily tarnish.

Golds are more expensive forms of metal papers, and are often embossed, gold leaf being used in place of the imitation metal, thus preventing tarnishing.

Varnished papers are those sent out already varnished, but, owing to the nature and brittleness of the varnish used, are not to be recommended. It is better to varnish the paper after hanging.

Besides these, there are many imitation leather papers, suitable for high-class decorative work, with reproductions of hand-tool work, natural skin effects, or treated in innumerable ways with various metals or bronzes.

Anaglypta, Cordelova, Salamander, Tynecastle and Lincrusta Walton are all embossed wall coverings, the materials with which they are made being reduced to a pulp, and pressed into moulds containing the design. All offer an endless variety of decorative effects, especially for panelling and ceilings. Anaglypta and Salamander, the latter being made of asbestos and therefore fire-proof, can be obtained for all purposes, and in all styles, and are sold by the yard or panel, according to the purpose for which they are required.

Other wall hangings include Japanese grass cloth, Fabrikona, a proprietary woven material, having a special backing to prevent accumulation of dust or vermin, and treated with a special sanitary preparation, and various sheet-metal materials, such as Emdeca and fibrous plaster friezes.

While the kinds of wall hangings are many, the designs, too, are innumerable, and present an almost bewildering variety. Although, undoubtedly, great pains are taken by the producers to provide harmonious colourings, combined with good designs, they are more or less governed by the demands of the decorator and his clients. Great care, therefore, is necessary in the selection of papers, and it is here that the good decorator can advise his customer. Some papers will only be suitable for certain rooms, some are more helpful from an artistic and architectural point of view than others, and, in consequence, a better idea of the ultimate effect can be obtained if the customer is allowed to see the selected paper in the roll.

Papers having predominant horizontal lines will tend to widen and lower the appearance of a room, the reverse happening when vertical lines are employed. Bedrooms should present a clean and light effect, the darker papers and more vigorous designs being reserved for libraries, studies, etc. Excellent effects are obtained with plain papers in conjunction with a good strong frieze to relieve the bareness, and, although it may be decidedly more remunerative to the decorator, yet the price does not always imply artistic value.

On Plate IV. Figs. 8, 9, 10, and 11, and Plate VII. Fig. 18, are illustrated various tools and brushes used by the paperhanger, and a description of them is hardly necessary here. A paperhanger's kit usually consists of a pair of shears, two or three knives, seam and smoothing rollers, smoothing brush, plumb-bob and line (Plate II. Fig. 14), rule (Fig. 15), paste-brush and bucket. A table is given at the end of this book (Appendix II.), showing one method of calculating the number of pieces required for papering a room but, with practice and experience, it will be found that the number can be ascertained readily by sight, the number varying according to the design and repeat of the paper selected. After the paper has been chosen, and the old paper, if any, removed from the walls, the latter are brushed down, and stopped, where necessary, with plaster of Paris, and the paper trimmed ready for hanging. Various trimming machines are on the market, the Oates machine and patents being the best variety, for it will unwind and trim both edges, or one only, or one "fine" and one "rough," and rewind the roll in one operation in forty seconds. Extra fittings are obtainable for use when relief materials

PLATE XVII.

Fig. 1. Straight Ribband.

- „ 2. Showing Ornamental and Balanced Treatment for Sign-board.
- „ 3. Decorative Sign with Cartouche.
- „ 4. Another Suggestion for Sign-board.
- „ 5. Diagram showing method of correctly forming Twist in Ribband, and also Radiating Fold.
- „ 6. Diagram showing method of correctly forming Twist in Ribband and also Radiating Fold.
- „ 7. Another Straight Ribband Suggestion.
- „ 8. Symmetrical Treatment of Ribband.
- „ 9. Symmetrical Treatment of Ribband.
- „ 10. Suggestion for Sign-writer's Sign.

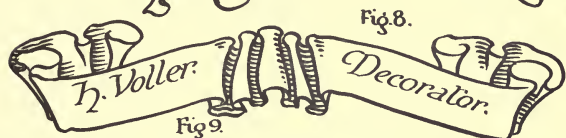
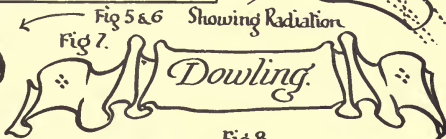
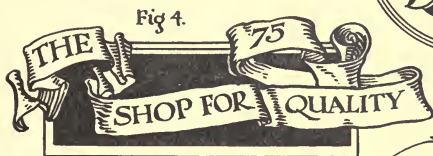
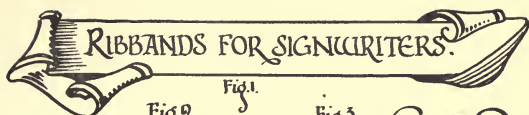


Fig. 11

require trimming. Another useful and recent trimmer is the Ridgely trimmer, 5 in. long and weighing only a few ounces. It has a straight-edge and zinc strip, and is very easy to manipulate (Fig. 11), but trimming by hand is still largely resorted to, many men rejecting the machine purely from prejudice. The paperhanger, in trimming the paper with the shears, usually turns a pair of steps down sideways, or uses a chair for sitting on, and unrolls a piece of paper on the out-

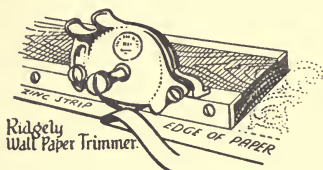


Fig. 11.

stretched legs in front of him, cutting with one hand and rolling with the other, an experienced hand attaining considerable speed and precision. After trimming, the paper is cut into lengths, allowing for waste, and is then ready for pasting and hanging.

Paperhangers' paste is prepared by mixing a sufficient quantity of well-sifted white flour to a stiff batter with a little water, taking care to beat up all lumps. Thin down with cold water to a creamy consistency and pour in boiling water, slowly stirring at the same time, until it "turns" or becomes thick again. Alum is often added to prevent it becoming sour and to help to strengthen it, but it must not be added if the paper to be hung is a "gold" or "ingrain." About a couple of teaspoonfuls will be sufficient for a gallon of paste. Other preservatives are oil of cloves, carbolic acid, or peppermint. For the heavier papers requiring extra adhesive qualities, stiffer and stronger paste is necessary, Venice turpentine, glue, or size being added to the ordinary paste while still hot.

In pasting the lengths of paper, they must be so arranged that the edge of the top length just projects over the edge of the paste-board, and the paste applied evenly and quickly with a distemper brush, starting from the centre of the board and working outwards. Should the lengths be much longer than the board, they should be pulled up and folded, as shown in Fig. 12, and each succeeding length treated in the same manner. Some papers require to be soaked longer than others, especially the better-class sanitary papers.



Fig. 12.

The hanging should be commenced carefully and methodically, worry and failure being often due to want of a little preliminary thinking. Start the hanging from the sides of the window and work round the room to the mantelpiece and door

or corner, taking care to choose the least conspicuous place for the finishing-up join.

In handling the paper, fold as in Diagram. Obtain at the top of the wall the correct point of matching, allow the rest of the paper to hang, and brush from the centre outward to the edges with the paperhanging smoothing brush. The ends are then marked with the point of the scissors, cut off and fitted, and the seams pressed down with the cloth or roller. Use should be made of the plumb-line for keeping the lengths upright.

Friezes are treated in a similar manner, save that here we have to deal with horizontal lengths ; but if the paper is carefully folded no difficulty should be encountered. Where specially good papers are being hung, the walls are often covered with lining papers, which must be quite dry before the second paper is applied.

When papering ceilings commence near the window and work from it, leaving the lap exposed to the light, thereby reducing to a minimum the showing of the joins. Painted walls requiring papering should, preferably, be lined with a good lining paper.

Among other useful hints may be noted the following:— Remove, if possible, all old papers. Be careful to note that the shade is the same in each roll, especially if the paper be a plain one. Centre the work if the pattern is a large one. Take care not to get paste on the ceiling or on the front of the paper. Above all, keep the work clean and be clean.

There is no space here to write of the various decorative treatments obtainable with the many hangings, especially in the relief materials, in the way of scumbling, bronzing, and lacquering, which must be left to a future volume. The adage, "Practice makes perfect," applies with special emphasis to paperhanging, the successful paperhanger being the man who can put thought into his work and adapt himself to the conditions and materials in which he is working.

QUESTIONS BEARING ON CHAPTER VII.

1. What is the superficial area of thirteen pieces of English wall paper, and how many pieces of French paper of the usual dimensions would be required to cover the same wall space? (1907.)
2. What is ordinary paperhangers' paste made from? Describe exactly how you would make it. Why is alum, glue, or carbolic solution sometimes added to it? (1912.)
3. What is the length and width of an ordinary "piece" of English wall paper? How many pieces will it take to cover 97 sq. yd. of wall of a uniform height of 10 ft. 6 in.? (1913.)
4. The wall paper of a room cost £4, 4s. The paper is usual standard English length and width. The wall space measures 146 ft. lineal round the room, and the height is such that each roll of paper will cut into three breadths. What was the price of the paper per yard lineal?



• CHAPTER VIII • PLAIN PAINTING & DISTEMPERING

THE student has been given already, in an earlier chapter, the various reasons for painting. The purpose now is to speak of processes. Assuming that new woodwork has been smoothly finished by the joiner, it should be dusted and any spots of grease, plaster, or glue, etc., removed with the putty knife. It is ready for the first process—that of *knotting*. The resinous exudations from knots have a penetrative and destructive action on painted work, and the knots have to be effectively treated beforehand, in order to prevent the discoloration that would certainly take place if no precautions were taken. For this purpose a material known as “patent knotting,” consisting of shellac dissolved in methylated spirit, is applied on and just around the knot. Where knots are very bad they are either cut out and the hole plugged or filled with hard stopping, or burnt out by applying the flame from a blow-lamp, or gilded by applying a leaf of gold on top of the knotting while it is still “tacky.” Care should be taken to see that the knotting can or bottle (Fig. 13) is well corked when not in use (the usual method being to have the handle of the brush run through the cork), owing to the tendency of the spirit to evaporate rapidly.

After the work has been thus treated it is ready for the “priming” coat, which is of far more importance to the ultimate finish than is generally supposed. This coat should form a suitable key for the stopping, and should contain more oil than turps, usually in the proportion of 3 : 2. Red lead, being such a good drier of linseed oil, and possessing considerable body, is extensively used as an ingredient in priming coats.

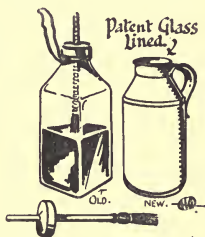


Fig. 13.

PLATE XVIII.

Fig. 1. Negative or Background Stencil.

„ 2. Positive or Ordinary Stencil.

„ 3. Suggestion for Stencilled Border and Corner.

„ 4. First Plate of a Two-plate Stencil (the colouring could be gradated or several colours could be used).

„ 5. Second Plate for the Background (which could be gradated in tone, giving rich effect).

„ 6. Stencilled "Block" Letters.

„ 7. Stencilled Treatment of Animal.

„ 8. Stencilled Treatment of Hand-painting (useful where number of Public Boards have to be written, in saving time).

„ 9. Stencilled Treatment of Bird.

Stencils & Stencilling

Repeat which might be cut more than once



Background cut out:- Negative on Background.



Ornament Cut out:- Positive on Ordinary.



First Plate (incomplete) showing cut pieces for the ornament which might be in two or more colours.



Showing unit of Repeat and also the difference between negative and positive Stencil Plates as mentioned in Chapter XI.



Border Ornament.



Rough Suggested Stencilled Treatment of Animal and Bird Forms

Second Plate (not complete repeat) showing Background to complete top Plate - leaving outline round the Ornament.

6



9.

An excellent primer for general work, and sufficient for about 100 yd. super., or to make 14 lb., is as follows:—

White lead	:	:	10 lb.	|	Patent driers	:	:	$\frac{1}{2}$ lb.
Dry red lead	:	:	$\frac{1}{2}$ „	|	Raw linseed oil	:	:	1 $\frac{1}{2}$ pt.
			Turpentine	:	:	:	:	$\frac{1}{2}$ pt.

Priming coats should be fairly quick drying, worked well into all quirks or holes, laid on evenly, and brushed out carefully.

After the work has been allowed to dry it is then stopped, or surfaced, with putty applied with the putty or stopping knife. The putty should be well pressed into the hole, care being taken not to leave any on the surrounding surface, and it should be, as nearly as possible, of the same colour as the ground being stopped. "Stopping" must not be confused with "filling," in which the object is to level up the general surface for highly-finished work.

New woodwork should hardly require filling if the surface is at all well finished, a good finish usually being obtained by stopping or paint alone. After stopping, the surface is slightly and carefully rubbed down with glass-paper, and is then ready for the second coat, which usually consists of "half and half," or equal quantities of oil and turps. There are various "fillers" for painted work, the coach-painters' filling being by far the best, where expense and time need not be considered.

Parson's or Harland's slate filling is especially recommended, and is obtainable in either grey or pink forms, and, for ordinary purposes of a slightly uneven nature, two or three coats of the filling composition will be sufficient to produce, when properly rubbed down, a perfectly hard, smooth, and durable surface.

Fillers are obtained in dry form and require mixing into a cream-like consistency with equal proportions of turpentine, varnish, and jappanners' gold size, and either brushed on, if thin, or applied with a broad knife where the surface is very bad. Two or more thin coats are preferable to one thick one. Besides the foregoing method there is the distemper filling, using either Alabastine or Duresco as the filling-up medium, the former giving especially good results. It is sold in powder form,

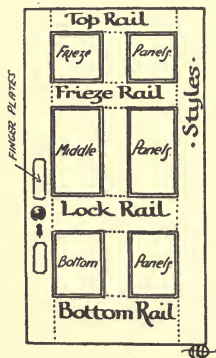


Fig. 14.

requires to be mixed with cold water only, and dries exceedingly hard. Where work has required "filling up," at least three more coats of paint will be necessary, two coats usually being sufficient where stopping only has been resorted to.

A word might be said here with regard to the ingredients of the respective coats. Generally speaking, the earlier coats of paint should contain more oil than turps, and the quantity of oil be reduced as the work progresses; care in this respect will prevent endless future worry and trouble. Flatting, which produces a dead or flat surface without any gloss, should be carried out on an oil coat to obtain a successful finish, and where a solid finish is *not* attained, it must be repainted with an oil coat prior to reflatting. A peculiar fault in flatting, known as "flashing," is usually due to the excess of oil in the colour, and the surface (Fig. 15) to which it is applied being too hard. Flatting colour should be applied quickly and boldly, and all edges kept going, no attempt being made to "work up" work that has already set.

Where old painted work has to be repainted it should be either burnt off with the blow-lamp, or rubbed down in colour or water with pumice-stone, and then brought forward the same as new woodwork.

In regard to burning off, care must be taken not to use the chisel knife against the grain of the wood, nor to have it so sharp as to cut or dig into the work. A broad chisel knife should be used for all large, flat surfaces, and the various shavehooks for mouldings, sashes, etc. The flame from the lamp should be directed to the portion of the work from which the paint is to be removed, and the knife held below and pushed upwards after the paint has been heated sufficiently to soften it, care being taken not to scorch or char the wood. After the burning off is completed the work will require sand-papery previously to being brought up as for new woodwork. So many painters fold sand-paper wrongly that the following Diagram has been inserted to explain the correct method of folding it. Half a sheet only is required, and this should be cut

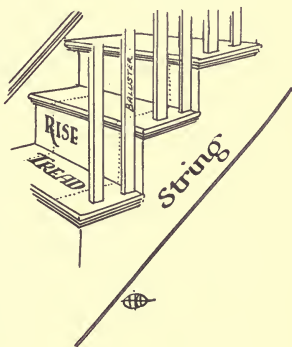


Fig. 15.

as shown, and folded so that two faces do not come together (Fig. 16).

The following general remarks concerning the treatment in paint of woodwork should be noted. Before any paint is applied, careful consideration must be given to the preparation of the surface. Remember that the priming coat is the important one, and that its constituents will vary according to the various conditions and nature of the different surfaces treated. To lay off, the badger or hog-hair softener should be used, taking care only to use these softeners after the work has been well brushed out with the tool or brush. In repainting old woodwork, all traces of grease must be removed by applying a warm solution of soda and water, or by rubbing down with turpentine. In

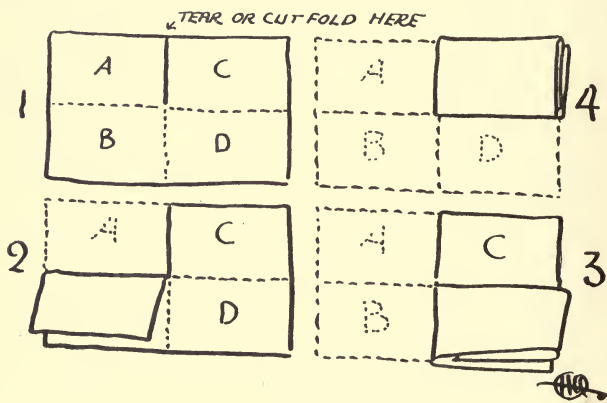


Fig. 16.

sand-papering avoid rubbing off the paint from mouldings, or arrises, as retouching will not only hinder the progress of the work, but will prevent a solid finish.

Edges should be painted before flat surfaces; mouldings before panels; and panels before rails or styles; while fittings, such as locks, finger-plates, door-handles, etc., should be removed before the painting is started. To obtain a clean job and good finish it is necessary to have both a clean brush *and* pot, and to avoid dust and dirt as much as possible.

The treatment of iron work with paint differs fundamentally from that used in woodwork. As corrosion proceeds probably from the metal itself, iron work is best treated while the metal is hot, the paint thus actually entering the pores of the metal.

All painting should be done when the atmosphere is dry, so as to minimise, as far as possible, the danger of damp becoming imprisoned beneath the paint film, rust being the chief source of deterioration in iron or steel. Before any paint is applied, therefore, all traces of rust must be removed, either by scraping, chipping, or rubbing down with a wire brush, and the metal rendered bright before treating with red lead, which is by far the best priming for iron work. Red lead does not require driers, adheres firmly, does not chalk, blister, or scale if the material is good and is correctly mixed and applied. Usually, boiled oil and a little turpentine are the two vehicles used with red lead, while some painters add a little varnish or gold size.

To treat galvanised iron, a coat of good washable water paint should be applied before using oil paint, so as to prevent future trouble in the form of "peeling," while in all metal work quick colour is to be preferred.

A whole chapter could easily be devoted to the subject of varnishing, but space will only allow brief mention of it here. Varnishing calls for more care than any other branch of the painter's trade, and its success depends largely on the treatment of the surface underneath. Cleanliness is indispensable, and for this reason varnish brushes and cans should be kept specially clean, while dust, draughts, and damp should be guarded against. Over 90 per cent. of failures in varnishing are due to lack of precaution in these respects, dust specks becoming magnified, as it were, when under varnish.



Fig. 17.

In applying varnish, a free flowing coat is to be preferred to a thin and brushed-out one, and it requires less laying off. All important portions of the work should be varnished first, leaving the skirting till last, thus preventing dirt being picked up from the floor, a useful precaution being to have a separate pot and brush for such work. Where two or more coats have to be applied, as in paint work, the under coats should dry harder than the upper one, hard drying varnishes being used for the purpose, and for finishing purposes, elastic varnishes. A word of warning is necessary as to the use of thinning and mixing varnishes. Many a job has been spoilt, and the customer's work lost, through the workman avoiding varnish "pulling" and thinning down the varnish with linseed oil without thinking of the ultimate result. In these cases the work will always be "tacky." Again, so little is known by the average decorator of the ingredients of modern materials, that it will easily be seen that, in mixing varnishes, one set of ingredients quite possibly acts detrimentally on the other set.

PLATE XIX.

- Fig. 1. Linear Lanceolate.
" 2. Lanceolate.
" 3. Elliptical.
" 4. Oval.
" 5. Serrate Oval.
" 6. Biserrate.
" 7. Fern Leaf.
" 8. Digitate (Horse-chestnut Leaf).
" 9. Pinnate (Rose Leaf).
" 10. Palmate (Maple Leaf and Fruit).
" 11. Orbicular (Nasturtium Leaf).
" 12. Fir Cone.
" 13. Pinnately Divided (Oak Leaf and Acorn).
" 14. Palmate (Sycamore Leaf).

SOME LEAF FORMS



Pale varnishes should be used in light painted work, and the darker varnishes for stained or dark work. In applying spirit varnishes, where exposure of the varnish to the air results in evaporation and thickening, the work should be executed quickly, and crossing avoided, while joins need to be picked up before having time to set. The same remarks apply to flat varnish, oil varnishes being preferable for general use to the wax flat varnishes. Only a short stretch should be completed in one operation, in order to avoid "flashing" or the appearance of glossy marks.

In varnishing wall papers, the paper should be treated first with warm size to enable the varnish to stand out, the proportion of size to water varying according to the nature of the surface of the paper to be treated.

Distempering differs entirely from painting and varnishing, and many a good painter has "come to grief" when put on a distemper job. Distemper is a water paint, consisting of whiting mixed with size or glue for binding purposes, and tinted according to the requirements of the work in question. The whiting should be steeped in water for some time previous to being made up into distemper, the lumps being either broken up with a stick or with the hands. After the whiting has been mixed into a moderately stiff paste, the tinting colours are added, if for coloured work, or a little ultramarine (sufficient only to remove the yellowish hue), if for white work. It must be borne in mind that all tinting colours must also be steeped in water before they are added to the whiting, for endless trouble will ensue should dry colour be added. After the addition of the colour, hot concentrated size is poured in, and the whole thoroughly mixed. The reader is reminded that reference has been made to the colours to be avoided for distemper tinting purposes. When distempering, everything must be kept going, the brush being allowed to swing gently backward and forward in the hand, but not "smacked" or banged about in the joyful manner of the thoughtless workman. The distemper should be applied liberally, boldly, and equally. All edges should be kept "alive," and for that reason only stretches should be taken that can be conveniently managed, thus preventing "laps" or places where the edges were picked up being apparent. "Holidays" should be particularly guarded against. It is just as important that the ground for distemper should be good as it is for oil painting. The surface, therefore, should be prepared accordingly, by removing the old distemper, and by giving it a coat of *claire-cole* or size to prevent unequal absorption, and thus uneven drying.

To prevent stains in old ceilings from showing through, a

couple of coats of good flattening colour with a fair proportion of driers in it, should be applied over the stain.

Numerous washable distempers are now on the market, "Duresco," "Olsina," "Alabastine," and "Walpamur," all giving excellent results. Various distemper brushes are illustrated on Plate VI.

In referring in these pages to glaziers' work, the intention is to speak only of cutting glass, the writer knowing how often the average painter is called upon to "fix in" glass. The instruments used for glass cutting are either a wheel or diamond, the latter being decidedly more costly, and liable to be spoiled in incompetent hands (Fig. 18).

The accompanying Diagram illustrates clearly how the cutting tool should be held, the pressure of the *forefinger* both directing the cut and supplying sufficient pressure for it. The wheel or diamond should be held perfectly upright laterally, and, in cutting, should be drawn towards the person only *just* hard enough to bite the glass. The glass is then taken to the edge of the cutting table; a slight tap is given to it along the cutting line; the piece to be removed is held between the thumb and forefinger, pressure exerted upwards and downwards, and the glass will then come apart. The principal kind of glass used is the sheet variety, which is made in many qualities, weights, and thicknesses, the 18-oz. and 21-oz. kinds being chiefly employed. A sectional drawing (Fig. 19) is here given to illustrate ordinary putty glazing. In glazing sashes, etc., it is important to remember that the sash-bars or frame should be given a coat of good priming colour before the putties are put in. Putty, besides being used as a connecting bond



Fig. 18.

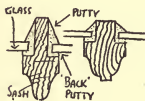


Fig. 19.

between wood and glass, as before mentioned in this chapter, is also used as a stopping for cracks, minor depressions, and nail holes. "Pure linseed oil putty" should consist of whiting and linseed oil only, but it is often adulterated by the use of an inferior oil, such as mineral and fish oils, or by the introduction of barytes with the whiting. Hard stopping is made from dry white lead—white lead ground in oil and equal parts of japanners' gold size and hard drying varnish, beaten to a clay-like consistency by pounding with a wooden mallet. This kind of putty should not be used from the palm of the hand, but from a small piece of glass or board, owing to its poisonous ingredient—white lead. Where deep depressions or holes

require stopping, holes should be made in various directions to form a "key," and thus prevent the stopping from falling out.

QUESTIONS BEARING ON CHAPTER VIII.

1. What are the following materials and their uses :—(a) "Endelline," (b) "Ferrodor" paint, (c) "Olsina" enamel, (d) "Kalsomine," (e) steel wool, (f) Matsine? (1913.)
2. A wall is already distempered with ordinary whitewash, and is in fair condition. What preparation and how many coats would you give it to make a good finish in Duresco or any similar washable paint? (1912.)
3. Is a newly-plastered wall (plaster of Paris) a suitable ground for painting upon with oil paint? State reasons for your answer. (1909.)
4. Describe an ideal kind of varnish to be applied to the inner doors of rooms, some of which are grained maple, others walnut, and others light oak. What are the proper ingredients of such a varnish? How would you test a sample in order to determine whether it was suitable? (1911.)



CHAPTER NINE: OR IMITATIVE PAINTING

RUSKIN, no doubt, would have dismissed graining and marbling as something "not what it seems to be" and, therefore, an evil. This idea, however, is not common to him alone, but is fairly prevalent, unfortunately, amongst a certain class, more especially among those in control of Art Schools in which decorators' classes are held. Before we consider whether the practice of graining and marbling is bad, let us study the decorator's point of view. More often than not, both are employed to give greater serviceableness to the work in hand, the broken ground showing dirt and marks less than would either a plain or particoloured ground. Again, the practice is often resorted to in order to give a pleasing effect in a broken ground, and the writer has seen examples where the wiping and combing-out have been executed on grounds, the colour of which showed that it was not the decorator's wish to deceive, and just as in cabinet-making pleasing effects are made with the symmetrical arrangement of the wood markings, so in graining effects are produced by the decorative grainer for pure decoration alone. The practice is to be deplored when it is employed on work totally unfit to receive it and architecturally out of character, or where the markings are slavishly followed with no regard to the "designing" point of view. Many of the markings in the timber itself, if copied religiously, would often not convey the effect of wood, and the same statement is true of marble; and it is here that the decorator has scope to use his art training for selective purposes. No doubt, as the late Walter Crane once said, the effects obtained by some decorative painters with this dear-to-themselves subject are "wonderful" and "fearful," yet imitative painting from the decorator's point of view can be made artistic and legitimate. Graining is not, as is often erroneously supposed, a comparatively modern process of decoration, for it was practised among the Egyptians, as is evident by recent discoveries, knots and grains being copied minutely and the colours standing well even to-day after four thousand years have passed. In common with many other

things, graining has been "in fashion" and "out of fashion," and there are signs now that it is returning to favour. It is therefore necessary on the part of the trade to see that what is done is "something of a joy for ever." The ambitious decorator will be wise to obtain a set of good veneer specimens for purposes of study. They will well repay him for the outlay, which would

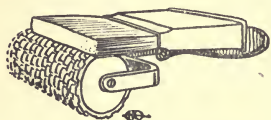


Fig. 20.

not be great, especially if purchased from a firm who specialise in preparing sample boards for the trade. The writer believes that for a sum of about £2, 2s., Messrs J. Latham Ltd., Timber Merchants of London, supply a mounted set of any six selected woods of moderate size,

which form fine models from which to practise. The chief thing in graining is the colour of the ground, as the actual graining colour is only a glaze. In fact, many very pleasing effects can be obtained in this way alone, Matsine being specially recommended for the purpose and most suitable wherever there are any considerable areas of wooden panelling, as in hotels, churches, and halls. It can be used either as a stain on new woodwork, as a "scumble" on painted work, or as a glaze on grained work, but the important point is to have the painted ground of the correct colour. This might be termed "brush-graining," and is often an acceptable substitute for ordinary graining to those who dis-favour the use of the latter, but even here it is necessary to have a good knowledge of woods to scumble satisfactorily or drag in the marking with the flogger. The tools and brushes required for graining vary largely, and much depends upon the *modus operandi* of the decorator. On Plate VII. are shown some brushes used, while in Fig. 20 is illustrated a roller composed of irregularly-marked disks with which



Showing use of the
Graining Wheel in
imitating Pores in Oak.

Fig. 21.

to imitate the pores as shown in Fig. 21. The flogger or jamb-duster is necessary for flogging the work before the wiping-out is commenced, the badger for softening purposes, the pencil over-grainers for placing the regular markings-in with facility, while such brushes as maple-eye dotters and graniting brushes are required for special purposes. A good set of steel combs should

be included (although many prefer leather ones), a horn or bone veining piece in lieu of a good thumb-nail; clean soft linen rags, as well as various fitches and pencils, will be further necessary. Many mechanical graining tools are now on the market, including even transfer and stencil forms, but these are not to be commended, as they only tend to produce a stereotyped class of work which is not desired by a good craftsman.

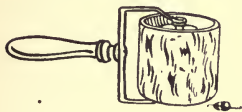


Fig. 22.

The painted grounds on which graining is to be executed should be well prepared, smooth, and hard, and before the graining colour is applied should be damped down with rag and whiting to prevent cissing.

The woods most often imitated are oak in many varieties, maple, walnut, mahogany, pitch-pine, satin-wood, ash, teak, and rosewood. A brief description of process used in each case may be given, though it is impossible to say that these are the only methods, for scarcely two "grainers" or "marblers" work alike.

In passing, it may be mentioned that the figure in real oak or, in fact, in any wood, varies according to the way in which it is cut or converted, boards cut in one way revealing splendid "clashes," or markings, known as medullary rays, while, when cut in a different direction, a much larger and coarser figure is revealed, of no use for artistic purposes.

The most important and, no doubt, the most difficult wood to attempt to imitate is *oak* (Fig. 23). The ground for light oak is made up of white lead and a little yellow ochre, with just a touch of raw umber added to tone down the yellow, while for the darker varieties yellow ochre and equal parts of Venetian red and burnt umber might be added to the lead, a still darker ground being made by adding a correspondingly larger amount of the umber and Venetian red, substituting for the ochre either Oxford ochre or raw sienna. The dark grounds will also necessitate the graining colour being darker, the latter, for light oak, being made, say, from burnt umber and raw sienna, with thinners composed of turps, B.O., and liquid driers, and for very



Fig. 23.

dark grounds, burnt umber, raw sienna, Vandyke brown; to this, if necessary, a little drop of black may be added. This colour should be laid on evenly and brushed out cleanly, care

PLATE XX.

Fig. 1. Rose (Leaf and Bud).

„ 2. Grape-vine.

„ 3. Marguerite.

„ 4. Daffodil (showing Decorative Treatment of Bulb and Roots).

„ 5. Nasturtium.

USEFUL PLANT STUDIES ·



being taken in the case of framed work, *e.g.*, a door, to preserve the constructional divisions. This will be secured if the panels are completed first, then the muntins and styles in due sequence. The combing or flogging is done at this stage, or the markings, known as "sapwood," "clashes," and "champs," wiped out with the nail or veining piece, which is covered with the linen rag, the marks being wiped out directly and precisely by, every now and again, covering the nail or veining piece with a fresh portion of rag. Here, again, it is necessary that the grainer should have in his mind's eye exactly what he intends to wipe or mark out, and this can only be the case with those who have, as it were, in their minds, the knowledge from which to draw.

After the work has been thus wiped out, combed, and flogged, it is given time to dry, and then overgrained with water colour. This overgraining gives a beautiful effect and depth to the work, needs just as much care as the wiping out, and can either make or mar the result. Vandyke brown, burnt umber, and blue black are the colours most in use for oak work, and they should be diluted with a little stale beer and brushed on with the overgrainer held in the palm of the hand in such a way that the fingers control the hairs or bristles as though playing an instrument. After the overgraining is complete, the light portions to the knots having been wiped out, and the whole softened off with the badger, the work is allowed to dry and is then ready for varnishing.

Pollard oak, brown oak, and root oak are well figured in the grain, and very twisty, and therefore call for more careful work on the part of the grainer.

Bog oak is almost black, but is often grained with ivory black on a dark brown ground, the work being finished almost entirely with the brush and the graining roller.

Mahogany graining requires a ground prepared from equal parts of orange, chrome, and yellow ochre, with one part Venetian red. For graining or scumbling colour burnt sienna and Vandyke, ground in water and mixed with a little stale beer, are used in the case of the Honduras variety of mahogany. This is rubbed well into the work and parts wiped off either with the mottler rinsed or a coarse sponge, and the work softened with the badger softener. Then with a camel-hair mottler place in the markings peculiar to the wood, which can only be correctly learned by studying the wood itself. After the work is dry it is overgrained with the same graining colour, but with the hairs of the brush separated and the pencil used occasionally to give a distinct grain.

Feathered or *Spanish mahogany* requires a somewhat darker ground, and the graining colour is worked up on both sides

towards the centre, the dark portion expanding as it proceeds, and the work softened and overgrained as described above, but especially with the "feathering." The student should obtain a good piece of timber or veneer from which to study, many excellent specimens being found in antique chests of drawers and other furniture. For *bastard mahogany* the method is much the same as for Honduras, save that the fitch is used to put in the dark markings, and the whole is well and carefully badgered.

Walnut graining ground may be made from ochre, burnt sienna, and umber, with a little white, and for the graining colour, burnt sienna and blue black in water. This should be well laid on with a tool, and taken off in parts by a damp rag or leather (the writer preferring a ball of stiff paper), by dabbing it on the colour. The whole should be softened with the badger, and, after it is dry, the work is overgrained with the same colour. The knots should be grouped in small clusters, the markings being copied from a good model. The work is finally finished with the pencil.

Walnut, both in the American and Italian varieties, is very effective and, when once mastered, an easy wood to imitate. In the absence of a good veneer the student should find many specimens of it in cabinet-making and furniture. Many fine pieces can be seen in piano-cases and old table-tops, and are well worth copying.

Teak is another wood often imitated, especially in the South, the ground being made from burnt sienna, a touch of chrome, and white lead, while the graining colour is made with black and burnt sienna, or, if preferred, with Vandyke brown, blue black and burnt sienna, the markings being placed in with either a small fitch or fairly large pencil.

Maple graining, or "bird's-eye maple," as it is called, is probably one of the easiest woods to imitate, and is usually executed on a white ground in water colour. The scumbling colour is made up of raw and burnt sienna, with a little blue black, and this is mottled by using the brush in the way already described; or the wave-like effect might be obtained by dabbing with a clean wet leather, afterwards softening with the badger. The high lights are worked up, while the whole is still wet, with a clean fitch twisted round in the fingers, the "eyes" put in with a little darker colour, and allowed to dry for overgraining. The red markings are then carefully put in with a red crayon, and the whole is mottled over with a glaze of blue black, which gives the beautiful effect so much admired in the actual wood. The eyes, it may be mentioned, can also be made with a piece of felt damped in the overgraining colour and rolled up like a funnel, many preferring this to the "dotter."

Pitch-pine graining should be on a light buff ground with a slightly reddish hue, and the graining colour from raw and burnt sienna, ground in water and mixed with a little stale beer. The veining is put in with a pencil or fitch and the pencil overgrainer. After drying, the work is glazed with varnish stumps and then overshadowed with a little Vandyke brown.

Ash graining requires a ground very similar to that for oak, but a little duller and greyer in hue. For the graining colour raw and burnt sienna are used, with a touch of raw umber, which is laid on as for pitch-pine, but the pencilling and marking require to be finer, with a slightly greater movement. The overgraining is best made from blue black and Vandyke in water. *Hungarian ash*, which stands in the same relation to the English variety as pollard oak does to the ordinary oak, has a fine, close, curly figure, and is usually worked from a slightly redder ground, whilst the American variety is whiter, usually with plainer markings, and generally straighter in grain.

Rosewood, which is an exceedingly handsome wood, is not connected with its namesake except in colour and smell. The ground is usually made up of Venetian red and ochre with probably a little burnt umber, and the graining colour with Vandyke brown and madder brown, with a touch of crimson lake, mottled and softened. The veins, which are very dark and almost black, are put in carefully with a fitch or pencil overgrainer in mahogany lake and blue black. The wood is not difficult to imitate, but should be carefully studied, as the effect is a really rich one and can be obtained without much difficulty.

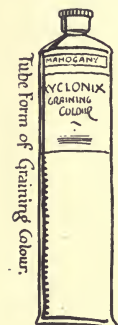


Fig. 24.

Satin-wood is finely figured with alternate zigzag flashes, and has a silky appearance. The ground is of a yellowish white, and the graining colour made from raw and burnt sienna deepened with a little raw umber. The procedure is similar to that used for mahogany graining, the overgraining consisting of a slightly mottled wash of blue black.

Tulip-wood, Thuya-burr, purple-wood, cherry-burr, and other woods are not extensively imitated in large panels, but are suitable for inlay imitation for smaller decorative effects. Besides imitating the more showy varieties in their natural colouring, many handsome effects may be produced by treating them in colours of purely decorative value, such as graining mahogany in blue and making a fine display with the feathering.

A very convenient form of graining colour is that put up in tubes, and known as Xylonix (Fig. 24). This saves a great



SUGGESTION
FOR
DINING ROOM.

deal of time, besides being more economical to use. All that is required is to thin the colour with water. All the principal graining and glazing colours can be obtained, besides a rich blue and green, and the colours can be intermixed to produce a further range. In finishing woodwork, some woods, such as pollard and bog oak, look better if flat varnished; but here, again, much depends on the decorator and his client. It will be seen, however, that graining, in combination with stencilling or some other decorative process, can be made much more of than it is at the present time, and, in the right hands, can be made the means of good decoration.

The remarks on studying from actual specimens of wood for graining apply with even greater emphasis to marbling, and the wise student will be always on the look-out for models, notes being made and kept as to the place where certain specimens may be seen. Many excellent examples are found in the larger churches, some particularly fine and rare pieces being used in altar work and for the decoration of side chapels, which might be copied in water colour and preserved in a sketch-book for that purpose. Such a sketch-book, if well treated, would be a gold mine for ideas on this branch of our subject, and for stencilling *motifs*, new letters, etc., etc., it would be exceedingly useful. Although, as a rule, a painter's pocket is a veritable "tool-chest," yet room should be found where a sketch-book might be kept.

The marbles most imitated are, Sienna, black and gold, Egyptian and Irish green, dove, rouge royal, vert antique, Italian pink, Sicilian or white marble, onyx, cipollino, alabaster, Irish and Emperor red, and St Anne's, and these are usually worked in body and oil colours, requiring a very skilful handling of the brush. The tools required are similar to those needed for graining, but a few more fitches, a supply of feathers, sponge, and several sash tools, as well as a good supply of rag, are necessary.

Sienna marble is usually worked from a white ground, although many work from a buff one. This ground is then gone over with a varied coat of yellowish tints, made from raw sienna and white lead, dabbed on and softened with the badger into the ground. While this is still wet the veins are drawn in carefully with black, either with the sable pencil or crayon, and softened off. These after drying are further heightened with a little blue or madder as required, and the small white veins and blocks finally added, care being taken to keep the whole work rather angular in the veining, and, above all, clean and cool in effect. A very rich effect can be obtained by heightening the work with water-colour glazes, and wiping off with a clean rag in parts.

For *black* and *gold* marbling also there are various methods. Some employ a black ground, others work from a white one, but although the writer prefers the latter, the black ground is the most used. The ground for this is of blue black, and, when dry, the veinings are added with a pencil with varying colours (which should all be out on the palette), such as white lead, ochre, Indian red, and vermillion, the spots being dabbed on in angular masses and connected with fine veinings by both pencil and small feather, whilst in the spaces between the cloudy effect is obtained by thin lead colour, put on with a fitch or tool and softened with a badger. The work can be further heightened by judiciously placing little pieces of gold leaf in the yellow veinings, the scraps on the waste leaves from the workman's sign-writing gilding-box being used up here.

Rouge marbles are many, but that known as *rouge royal* is best known. It is usually worked from a ground of Venetian red and Indian red, with a little black mixed with white lead which, when dry, is gone over with a thin coat of the same colour, but with the addition of a little lead, and then dabbed with a ball of stiff paper, dipped as required in a darker or lighter colour, using as "thinners" a little turps and gold size. The irregular faces of the rolled-up paper either apply or lift off just the shapes necessary in the imitation of this marble. The grey and white veins are then added with a feather. Frequent use must be made of the badger softener. This marble should be easily obtainable in the actual slab for copying, as it is largely used for commercial purposes.

White marbling is very simple to execute, but requires a close study of the actual marble for that reason. On a ground of white, another thin one is added, and the veins put in either with a pencil or a crayon while this is wet, the whole being freely and carefully softened with the softener. Slight touches of yellow and red should be added against the veins, which are of blue-black colour, but this should be done only with a good knowledge of the delicate and smooth tints in the real thing.

Vert antique is often worked from a black or dark green ground, and the masses of white and irregularly-shaped blocks added with a hog-hair fitch, the whole being finely worked up with a feather and pencil.

All the other varieties of marbling, of which there are a large number, cannot be described here, as methods differ with the individual. The resourceful and practical man will utilise things, such as combs, paper, rubber-balls or, in fact, anything which will give the effect he desires, but, to be successful, a

close and intimate study of the actual marbles must be made. The colour harmonies, as seen in the various marbles and stones, will provide often excellent schemes for interior and exterior decoration.

QUESTIONS BEARING ON CHAPTER IX.

1. How would you prepare a ground for (a) light oak ; (b) maple ; (c) dark oak, on work that has already been brought forward for grounding in ? State exactly from what you would make each colour. (1912.)
2. Describe the process you have seen followed for graining any particular wood, and the colours used. (1907.)
3. Explain briefly your best method of imitating Sienna marble. Describe the ground colour, marbling colours and tools you would use. Give particulars of any special detail in the working that you consider to be important. (1911.)
4. What are the chief qualities of a good umber and a good sienna for graining purposes ? The woodwork of a room is to be grained mahogany and finished in varnish ; describe how you would do the work. (1907.)

PLATE XXII.

Note.—In Heraldry the Ground of the Shield Surface is spoken of as the Field, and is not only distinguished by the Charges, but also by the Colour, known as Tincture, and these are represented in Black and White Illustrations by the following :—

	Shape of Shield.	Division of Shield.	Metal Colour or Fur.		Tincture and how Represented.
Fig. 1.	Triangular	Party	Gold	Or	Irregular Dots.
„ 2.	Pointed	Fesse	Black	Sable	{ Vertical and Horizontal Lines.
„ 3.	Half-round	Bend	...	...	...
„ 4.	Simple Shape	Pale	...	...	...
„ 5.	Decorative Shape	Fesse	...	...	...
„ 6.	Decorative Shape	Pale	Black	Sable	{ Vertical and Horizontal Lines.
„ 7.	Florid Forms	Border	Tenné	Orange	{ Horizontal and downward form, right to left lines.
„ 8.	Florid Forms	...	Silver	Argent	Plain.
„ 9.	Florid Forms	Chevron	...	...	...
„ 10.	Florid Forms	...	Red	Gules	Vertical Lines.
„ 11.	Simple Shape	Cross	Blue	Azure	Horizontal Lines.
„ 12.	Simple Shape	...	Green	Vert	{ Left to right. Oblique Lines.
„ 13.	Elliptical	...	...	...	...
„ 14.	Circular	...	...	...	...
„ 15.	Almond	...	...	...	...
„ 16.	{ Simple Square } Forms	Saltire	Purple	Purple	{ Right to left. Oblique Lines.
„ 17.	{ Simple Square } Forms	Pile	Ermine	...	{ Black Spot Powdering.
„ 18.	{ Simple Square } Forms	Cross	Blood-colour	Sanguine	{ Crossed Diagonal Lines.
„ 19.	Rampant Lion, as in Royal Scottish Coat of Arms.				
„ 20.	Tudor Rose.				
„ 21.	Fleur-de-lis.				
„ 22.	Statant Guardant.	Twist or “Torus” shown below consists of six alternately colour divisions.			
„ 23.	Union Jack.				
„ 24.	Passant Guardant, as in Royal Arms of England.				
„ 25.	Helmet with Barred Visor.				
„ 26.	Tilting Helmet.				
„ 27.	Imperial Crown.				
„ 28.	Naval Crown.				
„ 29.	Mural Crown.				
„ 30.	Displayed Eagle.				
„ 31.	Dragon.				
„ 32.	Displayed Eagle.				
„ 33.	Dolphin.				
„ 34.	Borough Arms of Portsmouth.				

A PAGE of HERALDRY.





THIS branch of the trade, more than any we have as yet considered, calls for careful training of the eye and ability to draw. Geometrical aids and mechanical means may enable one to form a good letter, but will not impart the skill necessary to space correctly the letters so that they read pleasingly, or to give that individuality so essential to good lettering. It would be amusing, were the results not deplorable, to record fully how many writers, in advising those desirous of acquiring proficiency to execute sign-writing, encumber them with all manner of rules and appalling methods of construction, which tend to embarrass and to hinder progress, and which would give some ludicrous results if actually put into practice (Fig. 25).

Others put before the sign-writing aspirant a large variety of examples, as though mere continual practice in copying them is the sure way to success, and, although a knowledge of geometrical drawing should, undoubtedly, form part of the curriculum of a decorator's training, yet that by itself will not give the facility to wield the pencil so as to form good letters, pleasing in arrangement and proportion. The wise student, then, will adopt a middle course, and endeavour to become a good draughtsman, so that he may appreciate as well as execute workmanlike and good designs, and which will place him in a position superior to those lacking such ability.

What is drawing, after all, but expression in line or form, of recording what is seen through the mind or eye? It may not be possible to produce a Giotto by an assiduous training in drawing, yet training the eye to see accurately can be cultivated by practice and application, in a greater or less degree, by every one.

From the beginning of our study in lettering, it must be clearly borne in mind that there is, to each letter, an essential form which gives the characteristic proportion and

structure, and these should always be kept visually before one. There are given in Plate X. pp. 40, 41, some skeleton or structural shapes, and the reader is advised to experiment with these on the lines shown underneath, in extending both upward and laterally, and to endeavour to find out the limits to which such experiments can be carried, so as still to retain the legibility and distinctness of the letters. The first consideration in good lettering is legibility. This calls for simplicity, good proportion, and beauty of form, both in general form, uniformity, and arrangement. No better example could be studied for purposes of copying and building later forms upon than that found on many of the Roman monuments, such as the inscription on the Trajan Column of about 114 A.D., and of which there is an excellent cast in the South Kensington Museum. To those unable to study at the museum, a copy of the portfolio of Roman Capitals (prepared by G. Wooliscroft Rhead) would be valuable. These letters, being copied from the Trajan Column, and being quite large, afford excellent specimens from which to study.

The chief point of difference between the Roman capitals and those in general use is the proportion, the modern specimens being, to all intents and purposes, equal in weight or size, while the old capitals vary largely, the letters O, Q, C, G, D, M, W, H, A, U, V, T, and Z being classed as "wide," while the remainder are classed as "narrow." Moreover, in studying them carefully, subtleties of form will be found which no mechanical construction could ever give, and which will be more appreciated on closer comparison with many of the utterly vulgar and void-of-all-form letters so frequently displayed on our hoardings and facias. This question of "proportion" has occasioned the writer many lengthy discussions with those accustomed to believe in even-spaced letters, as are enshrined, for example, in the "block" letters, but, as his own conversion, in common with many others, was not sudden, it has been a pleasure to watch students abandon these forms, and to trace the influence which the study of the earlier types has on the whole of their artistic effort. Especially is this so where drawing these letters is encouraged by executing them with quill or

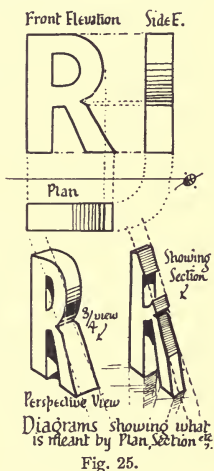


Fig. 25.

PLATE XXIII.

- Fig. 1. Painted Wall and Ceiling Decoration.
„ 2. Painted Wall and Ceiling Decoration.
„ 3. Painted Wall and Ceiling Decoration
„ 4. Painted Wall and Ceiling Decoration.
„ 5. Painted Wall and Ceiling Decoration.
„ 6. The Scarabæus or Winged Beetle.
„ 7. Egyptian Flower-bud and Water-border Ornament.
„ 8. Vulture.
„ 9. Egyptian Lotus Flower and Bud-border Ornament.
 Note.—Zigzag lines represent Water.
„ 10. Border Ornament with Heads.
„ 11. Common “Rosette” Form used.
„ 12. Vulture.
„ 13. Spiral Border Ornament.
„ 14. Musician.
„ 15. Leading Lines of Circular Ornament.
„ 16. Emblem of Eternity (Egyptian Seal).



1

EGYPTIAN ORNAMENT.



4



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11



14



12



15



16



15

reed, a course of which would undoubtedly benefit the would-be sign-writer.

The letters **O** and **I** may be taken as the key letters of any alphabet, and their characteristics should influence the rest of the letters; moreover, **O** might be regarded as the space-determiner. This is shown roughly on Plates VIII. and IX. pp. 36, 37; X. pp. 40, 41; XII. pp. 50, 51; XIII. pp. 56, 57; XIV. pp. 60, 61, and XV. pp. 64, 65. There are also shown some type forms very largely used by the trade.

In setting out, the general body or bulk of the letter must be considered rather than the limitations, such letters as **T**, **V**, and **A**, for example, when coming next to letters like **O** or **M**, will need special spacing. In spacing out large signs, it is well to measure the work carefully, and make a scale drawing, but in ordinary signs it will be found by careful practice and experience that setting out may be proceeded with practically at once, and by the aid of very few lines. More important than the correct spacing of letters is that of spacing words and giving prominence to what is really essential. These may be set out in either the "massed" or "symmetrical" forms.



Fig. 26.

The equipment of the sign-writer will consist of the following:—Large pair of compasses, set- and T-squares, chalk-line, pounce, fourfold rule, palette, mahl-stick, sable pencils, various fitches, chalk and pencil.

The *pounce* (Fig. 26), required for dusting the ground or pouncing through the pricked outline of the work previously set out on paper, is made by tying in a piece of linen, in the form of a bag, finely ground whiting, red lead, or charcoal.

The *chalk-line* can be a length of any string or fine cord wound round a reel, and is used to enable long lines to be obtained easily. This is done by chalking the line, stretching and pulling it taut, and then snapping it by lifting it with the thumb and finger.

With regard to the "pencils" required, sables will be found to be the cheapest in the end. They have a fine spring and point, but great care must be taken to keep them in a clean condition and in good order. After use they should be carefully rinsed in turpentine or paraffin oil, and the paint worked out between the thumb and finger, dried and greased—the writer preferring for this vaseline to tallow.

The *mahl-stick* is used for steadying the hand, but will not always be necessary as freedom and experience are acquired.

No special directions need be given here as to how to mix

colour, in view of what has been said in former chapters; but for ordinary writing the colour should be neither podgy nor too thin, but should work easily and help the successful manipulation of the work.

In gilding, certain other tools will be required, according to the class of gilding executed. Some of them are cushion, knife, tip, and burnisher, while for glass embossing, which we will describe later in the chapter, fluoric acid, etc., will be necessary.

In sign-writing the brush should be kept pretty full of colour, and worked to a point each time on the palette. Then in a free and direct manner the outline should be formed first, and filled in with another brush if necessary. It is essential that the pencil should be worked round and kept pointed, as constant use in one position will spoil the tip and prevent clean, sharp work. Endeavour to visualise the letter before putting the pencil to work, and then hold the brush firmly and follow the directions of the curve or line to be painted with it before actually setting it down definitely.

The mahl-stick should be held firmly, and given plenty of scope for easy movement; and the hand holding it should manipulate it simultaneously with the hand executing the writing. Clean rag should be kept at hand to remove speedily any incorrect work or accidental droppings of paint, but both of these faults will be strenuously avoided by the workman who takes pride in his work. As with ordinary brushwork, it is necessary to lay off the colour well, to avoid fat edges, and also to see that the colour is not too thin, as on some surfaces considerable trouble may arise by the colour running.

Where "raised" or "blocked" letters have to be executed, care should be taken to represent correctly the cast shadows and thickness, and to consider the method and source of lighting. Many examples seen in prominent places show ignorance of this consideration on the part of some sign-writers and want of thought in others. Some deprecate the practice of imitating raised or incised lettering, or, in fact, representing anything to appear what it is not, classing it as deception and corruption, but it would need more space than is at our disposal to discuss the question, which can well be summed up by asking "What *is* truth?"

The principles as laid down by Owen Jones, which are given in Chapter VI., might especially be read in connection with this subject, and it should be noted that, after exhaustive experiments, it has been found that the following colour combinations were legible at distances ranging from 375 ft. to

340 ft., and are specially recommended where signs have to be read from a considerable distance. They are given in order :—

- | | |
|---------------------|---------------------|
| 1. Black on yellow. | 6. Yellow on black. |
| 2. Green „ white. | 7. Black „ white. |
| 3. Red „ white. | 8. White „ red. |
| 4. Blue „ white. | 9. White „ green. |
| 5. White „ blue. | 10. White „ black. |

Although the foregoing will not prove alike in their results, owing to varied size of lettering or the amount of ground showing, yet they afford room for interesting experiments.

In lettering which embodies gilding, it is important to see that the ground to which the gold is to be applied is dry and hard, to time the size accurately, whether ordinary japan gold size or oil size, and to make sure no “holidays” are left when sizing. Often it will be found expedient, where the letters are in colour and a gold outline is required, to execute the outline first, filling in the colour afterwards, and also in the case where the blocking has to be finished or shaded gold. Oil size, although it has to be left longer and has a greater tendency to flow if used too liberally, is certainly the better medium when time will permit, as it takes the gold better and gives more brilliant lustre.

In shading over gold, transparent colours only should be used, burnt sienna giving a transparent and beautiful depth. Writing on glass calls for fresh methods, especially where gilding is required, but in ordinary glass writing in colour the work should be either set out carefully on the reverse side with a hard piece of soap, or on paper, and outlined with black and secured to the window, forming a guide from which to work on the reverse side of the glass.

Where raised letters are to be imitated, the cast shadows, gradated shading to the blocking, and the blocking itself should be placed in, and also the outline if wanted, leaving the body of the actual letter to the last, scrupulously avoiding any “skips,” as these will show clearly when the background is stippled in. In *glass writing*, much depends on the correct preparation of colour, for the colour must possess elasticity, dry in a reasonable time, and flow well under the brush. Varnish, gold size, and turps are the media most used according to the drying properties of the pigment to be mixed, while for backing letters due care must be observed that it possesses the necessary relation to the under colour to prevent cracking and peeling.

Lettering in gold on glass differs entirely from that on wood or metal, where the size is behind the leaf, for, in this

case, the necessary adhesive must be capable of taking the gold and yet not interfere with the lustre as between it and the glass. The glass should be thoroughly clean, and the lettering matter prepared as given above, and, if the letters are to be outlined, this should be placed in. The water size required is prepared by placing a pinch of Russian isinglass, large enough to cover a sixpence, into half a pint of distilled water and boiling gently, afterwards allowing it to cool and then straining through fine muslin or linen cloth. Care must be taken not to have the size too strong.

To apply the size, a camel-hair mop, as shown on Plate VII. pp. 30, 31, will be required, and also a gilder's tip. Untransferred gold leaf is used, and the book of gold is taken in the left hand and turned back, leaf by leaf, as required, the tip in the right hand, and also the mop, which can be held by the mouth when actually applying the gold. The tip is rubbed briskly on the hair of the head and then flatly applied to the leaf, which is then transferred to the glass, which has previously been brushed with the size-charged mop. Where a whole leaf is not required, the leaf of the gold book might be turned back and the amount required cut by running the finger-nail along the edge. Practice and experience alone will enable one to lay the gold without "splits," and also to determine the necessary strength of the isinglass. After the gilding has been done, any "holidays" are again sized and patched up, and after drying, hot water can be poured directly on to the back to further clear the size between the gold. The letters, when dry, should be burnished gently with a piece of absorbent cotton-wool. The letters must now be "backed in," and after the backing is dry, they must be trimmed gently with a piece of sharp, straight-edged wood, and superfluous gold washed off. The writing is now ready for shading and further backing in of the ground, which should be stippled in.

Messrs C. Mander Bros. supply special glass colours, which are guaranteed not to cause cracking, etc., which so often occur when a knowledge of pigments and oils is lacking.

Glass embossing is a still further province of sign-writing, and demands some slight acquaintance with the action of several acids, principally fluoric acid, and is hardly a subject for the present volume. A brief description of the work, however, is as follows:—

The design or work is set out in reverse on paper, the glass thoroughly cleaned and the ground painted in with Brunswick black, and the edges of the glass walled up with Russian tallow. Hydrofluoric acid is applied all over the work, and after sufficient time has elapsed to allow the action to take place,

PLATE XXIV.

- Fig. 1. Border Ornament.
„ 2. Rosette of Lotus Flowers and Buds.
„ 3. Lotus Flower, Bud, Knop and Guilloche Bordering.
„ 4. Lotus and Bud Border Ornament.
„ 5. Border Ornament.
„ 6. Border Ornament.
„ 7. Winged Globe with Figure of a god.
„ 8. Another Form of Winged Globe.
„ 9. Border Ornament.
„ 10. Part of the Assyrian Tree of Life.
„ 11. Small Border Ornament.
„ 12. Assyrian Treatment of Bird Form.
„ 13. Border Ornament.

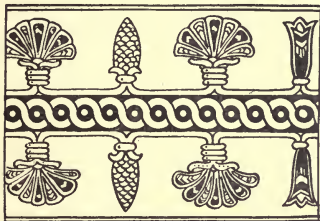


ASSYRIAN ORNAMENT.



1.

2.

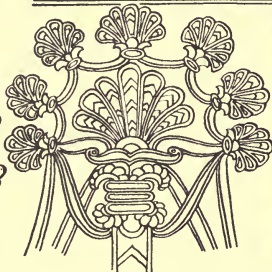


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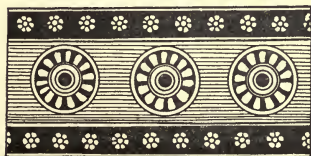
10.



8.



11.



9.



12.



13.

it is poured back into the gutta-percha bottle by making an outlet in one corner of the grease wall. The work is then washed, and the Brunswick black removed, when the acid will be found to have eaten its way into the glass and given an incised letter. Caution is needed in dealing with the acid, as it is dangerous both to touch it and to inhale its fumes.

Gold leaf, it should be mentioned, is supplied in books of twenty-five leaves of $3\frac{1}{4}$ in. square, and may be obtained either transferred or untransferred, and also in shades ranging from lemon to extra deep, and in degrees of thickness known as extra thick, double, and triple.

Foreign and imitation gold are stocked in many other sizes than English gold. Aluminium leaf is also supplied in leaves



Fig. 27.

ranging from $3\frac{3}{8}$ in. square to 6 in. square, and may be obtained either transferred or untransferred. Silver leaf, which must be lacquered, and which is not often used now, is sold in books of fifty leaves and $4\frac{1}{2}$ in. square. Gold and aluminium leaves are also now obtainable in ribbon form (Fig. 27), in lengths of about

67 ft., and in widths varying from $\frac{3}{16}$ in. to $1\frac{1}{4}$ in. These are especially useful for lining and special-width letters. With the foregoing exception, gold leaf is sold by the number of leaves. Thus, to order five hundred of gold would mean twenty books.

The various gold and bronze powders are sold by the oz. or lb., and may be procured in a variety of shades, as copper, fire, silver, green, and various shades of blue. Bronze and aluminium may also be obtained in powder form.

The vehicle commonly used to prepare these in liquid form is amyl acetate, which has a strong odour resembling that of essence of pears.

Oil gold size is sold by the pound, as also is isinglass, gelatine, and parchment cuttings. Writing on cloth or canvas calls for no particular remark except that sharp colour made of gold size, varnish, or turps is usually used, and extra care must be taken to prevent blunders or spots.

QUESTIONS BEARING ON CHAPTER X.

1. Set out the word TIMBER SAWYER in 2-in. letters in the style of type used in Italy about 1650, *i.e.*, Renaissance. (1913.)
2. Sketch the letter A in each of the following types:—(a) Plain block; (b) Roman old style; (c) modern Roman; (d) Church Text capitals, Lombardic style; (e) Script. (1913.)
3. Give your opinion on the use of fancy lettering in trade advertisements. Sketch three letters of what you consider a suitable type for reading at a distance of 200 yd. from the eye, and name colour of letters, ground, outline, or shading, whichever method you recommend. The advertisement must be attractive as well as readable. (1912.)
4. Set down upon your drawing paper the word ROMAN in Roman lettering, and the word GOTHIC in Gothic lettering. The letters to be 2 in. high. (1909.)

PLATE XXV.

- Fig. 1. Simple "Fret" or "Key" Pattern Border.
" 2. Simple "Fret" or "Key" Pattern Border.
" 3. Simple "Fret" or "Key" Pattern Border.
" 4. Border Ornament.
" 5. Palmette Border from Vase Paintings.
" 6. "Fret" or "Key" Border Ornament.
" 7. "Fret" or "Key" Border Ornament.
" 8. "Fret" or "Key" Border Ornament.
" 9. "Fret" or "Key" Border Ornament.
" 10. Palmette Border Ornament from Vase Paintings.
" 11. Palmette Border Ornament from Vase Paintings.
" 12. Palmette Border Ornament from Vase Paintings.
" 13. Palmette Border Ornament from Vase Paintings.
" 14. Palmette Border Ornament from Vase Paintings.
" 15. Leaf Ornament from Vase Paintings.
" 16. Leaf Ornament from Vase Paintings.
" 17. Leaf Ornament from Vase Paintings.
" 18. Leaf Ornament from Vase Paintings.
" 19. Guilloche Border from Vase Paintings.
" 20. Guilloche Border from Vase Paintings.
" 21. Rosette Border from Vase Paintings.
" 22. Rosette and Leaf Ornament.

GREEK Ornament





HERE is a vast field for the ambitious decorator to achieve success in devoting himself to the special lines connected with the trade, and the writer believes that it is in *this* sphere that the education of the young aspirant can be largely helped by the Art Schools of the country, provided the practical side is always considered. One writer has said, speaking from a wide experience, "a new profession is, indeed, waiting to be recognised," and he advocates young decorative painters, "fresh from the schools," to form themselves into working partnerships, with a well-equipped studio, and to include in their undertaking such work as "frieze-painting, stencilled decoration, plain decoration in schemes of flatted colour, the choice of wall papers for halls and rooms, the making of designs, the selection of furniture, and many other things which would indeed help towards the ideal home." There is certainly wide scope for decorative household work, and, as the same writer further points out, "the *public* money spent on the Art Schools ought to be useful in a *public* manner," but does not do so now, largely owing to lack of organisation and no business common sense being put into the aims of the students. This, surely, should be an encouraging word for the industrious decorator, for "nothing is denied to well-directed diligence."

Without doubt *stencilling* is the most useful means afforded to the decorator to apply his knowledge of ornament and decoration, and, although this is so, yet stencilling as a craft seems entirely neglected by many in the trade. The idea that stencilling is a fairly modern method of decoration can be best refuted by mentioning here that Quintilian, the celebrated Roman rhetorician, in his "Institutiones Oratoricæ" recommends "the use of a copy in wood, in which the letters are well cut, that, through these openings, he may trace the characters with his stylus," and many other instances might be given, bearing out the antiquity of the use of the stencil plate.

The plates are of either metal, pasteboard, or paper, upon which the ornament is drawn or transferred, and then cut out

with a knife (Fig. 28), the design being preserved by "ties" and the colour pounced through the cut openings by means of stencil brushes (Fig. 29), the plate being used again and again where repetition of the pattern is required. Ordinary cartridge paper may be used for the cutting plate if first treated with boiled linseed oil or patent knotting, but the paper preferred by the writer, and used largely for the purpose, is "green Willesden," which, besides being excellent for receiving the pencil or crayon, is waterproof, and much tougher than ordinary cartridge paper, and consequently more durable. The address of the manufacturers of this article is "Willesden Paper and Canvas Works, Willesden Junction, London," and they would, no doubt, submit samples for experimental purposes.



Showing Knife Blade most suitable for Cutting Stencils

Fig. 28.

Stencil plates are also cut in lead foil, copper, zinc, and straw and paste boards, but of course these are cut less easily. Bristol board, though expensive, makes an excellent cutting medium, and can be obtained in sizes up to Imperial. The tools required are few—a good sharp penknife is preferable to stencil knives sold by artists' colourmen, several punches (Fig. 30), stencil pins, sheet of "salvage" glass, and an oil-stone to sharpen the point of the penknife blade occasionally, as, on the glass, it soon loses its fine cutting edge. The design may be sketched either on a separate sheet of paper and transferred to the stencilling paper, or, preferably,

Diagram showing Stencil Plate & pouncing:



Fig. 29.

executed straight on it. The ideal plan is to be found in sketching the design in with ordinary vine charcoal, this medium affording great freedom and requiring only flicking or dusting to remove it, and by afterwards filling in the patches or portions of the design with colour, leaving the outline to form the connecting pieces or "ties."

In designing, of course, due attention must be given to the many considerations which were mentioned in a previous chapter, especially as to "fitness." Secure the leading arrangement of the design first—the leading lines or the geometrical basis, if there is one, or, as it is called, the "scaffolding." Then



Fig. 30.

PLATE XXVI.

- Fig. 1. Ornamental Scroll from Monument of Lysicrates.
„ 2. Palmate Painted Ornament from Vase.
„ 3. Greek Stele Crest.
„ 4. Rosette.
„ 5. Greek Stele Crest.
„ 6. Border Ornament based on the Ivy.
„ 7. Coffin Ceiling Ornament.
„ 8. Palmate Ornament.
„ 9. Form of Grecian Helmet as shown on Coin.
„ 10. Mask of Tragedy.
„ 11. Form of Grecian Helmet.
„ 12. Female Mask.

GREEK Ornament.



plan or plot the masses, paying little heed, at this stage, to the drawing, and endeavour all the while to bear in mind the ultimate colour effect of these masses or spots. By experience and practice one will find that, before starting, the design will have been already mapped out in the mind, or visualised, enabling the designer the more easily to commence directly with the finished drawing. As the stencil plate is used primarily for repeating purposes, it is well to remember that repetition, to be pleasing, should be dignified and simple, and usually the more severe it is in treatment the better will it bear constant repetition. Further, the nearer the ornament approaches to nature, the less suitable is it for repeating. But, reverting to actual stencil cutting, while the "ties" may be made to form part of the design, or even the design itself, very often they are quite arbitrary, the design being split up into smaller parts in consequence; but even in this case they can be so arranged as not to break up unnecessarily the unity of the design or to stop the flow or growth, but can be designed to assist or, with care, lend fresh lines to, the pattern.

Stencils may be grouped in two classes: those known as *negative* or *background stencils*, the other as *positive* or *ordinary stencils*. In the former the cut-out portions form the background, while in the latter they form the design. Examples are given, illustrating the difference between the two, on Plate XVIII., and the reader is advised to experiment frequently with both kinds.

Stencils are used for an endless number of purposes, and stencilling may be executed directly on walls, ceilings, etc., or may be printed on the wall covering or canvas and hung afterwards; but whichever way is adopted, stencilling as a craft is essentially one for the decorator. The Japanese are expert craftsmen in this art and, to one wishing to succeed, no more helpful advice could be given than to make a careful study of the work of these people, although their method of execution differs largely from our own. There is a fine opportunity also for experiments in stencilling, experiments with thick colour, transparent glazes, metallic effects, slipping—drop the stencil plate a trifle and then pounce through again with either a lighter or darker colour, etc., etc., but, whatever the method, make sure that the design, whether original or purchased ready-cut, is in keeping and character with the ultimate surroundings, and generally good in *motif* and treatment.

Another field which the decorator might explore more widely is in the old art of *gesso* or *stucco duro*. The material, as used by the early Italians, usually consisted of well-burnt and slaked lime, fine sand, or finely ground unburnt limestone, or white

marble dust, well tempered together with water, and carefully beaten up with spatulas into a good paste suitable for working with. So well did the early workers choose their materials, and so excellently did they prepare them, that the work would afterwards bear elaborate polishing.

To those who desire to mix their own material, a mixture of whiting soaked in cold water, gelatine, or glue, boiled oil and a little resin, thoroughly mixed together to the consistency of cream, is recommended, but a substance which answers well, or is, in fact, superior to this, is Alabastine-Opalia, prepared by the Alabastine Co. Ltd., under the direction of Mr M. B. Church. It is in powder form, requires cold water only to make it ready for use, and there are many uses to which it can be put for high or low relief.

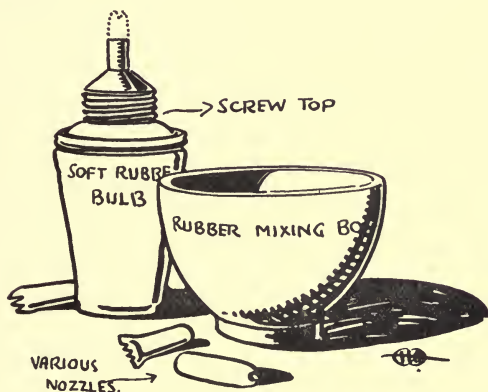


Fig. 31.

Special outfits (Fig. 31), as illustrated, can be obtained for producing relief enrichments, and the writer has both executed and seen many specimens producing excellent decorative effect. For small work or low relief it is well to use a rather long-haired brush or rigger, and it will be found that the gesso and the brush will help to give certain characteristic forms, especially applicable to foliage. The gesso should be neither too thin nor too thick, but should be of the consistency that will allow the brush to pick it up and distribute it easily. For high relief work it is often necessary to build up or pad the work first with cotton-wool or tow dipped in the mixture, allowing it to set before applying the gesso, coat by coat, building it up to the desired form.

PLATE XXVII.

- Fig. 1. Ornamental Treatment of Griffin.
„ 2. Mask of a Satyr.
„ 3. Mosaic Ornament.
„ 4. Roman Candelabrum, showing Treatment of Acanthus.
„ 5. Roman Antefix.
„ 6. Roman Panel Decoration, showing use of Half Figure.
„ 7. Fruit Festoon between Skulls.
„ 8. Foliated Scroll Ornament.
„ 9. Moulding Enrichment.
„ 10. Acanthus Leaf from Roman Capital.



ROMAN ORNAMENT.

1



3



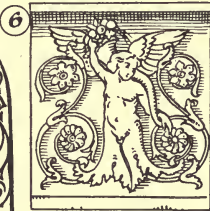
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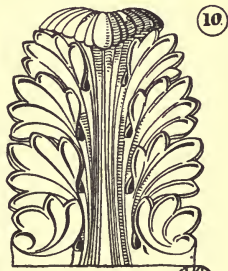


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9



10



Gesso work may be executed directly on a coloured ground, or the medium itself may be in colour and executed on a white or coloured ground, or it can be picked out in colour, gilded, lacquered, or painted. It therefore affords excellent openings for the resourceful decorator, but experiments should be made modestly at first, remembering that low relief is essentially the characteristic feature of the craft.

A still further sphere for enterprise is that of *scumbling and colour glazing*, or the application of colour upon colour, in scumbling with heavier colours than in glazing, where only transparent colours are used. Nearly every painter has had some experience in scumbling, even if only in painting railings and finishing them in bronze, the last coat being wiped off on the projections, etc., giving an excellent finishing effect, but few, probably, have seen the vast possibilities of the same method employed on raised patterns and surfaces, whether oil, turps, or water colour be used. Many fine old wood effects may be obtained by scumbling in various colours over bright, dull, light, dark, or even patterned grounds, and by either wiping off, dragging, or flogging, or simple brush effects. Matsine, as mentioned in Chapter IX., gives excellent glazing effects, but much depends upon the ground colour. All the transparent colours, such as the lakes and madders, siennas, various blues and greens, can be employed to give varied and beautiful decorative results, especially when combined with the other crafts already mentioned—stencilling and gesso.

Sgraffito work might also be employed more than it is by the decorator. It is one of the oldest known surface decorations, and one of the first forms of artistic expression used by man; and, although it may more appropriately be spoken of in connection with plasterers' work, yet it affords so much scope for both interior and exterior wall decoration that it is well to mention it briefly in this work. As the name implies, it is ornament produced by scratching or scraping, and the method is as follows:—

After the "floating" coat of plaster has been applied, giving sufficient key for the next coat, which is the "colour" one, or if several colours are to show in the finished work, the design, after having been pricked, is placed *in situ* and pounced through, care being taken to preserve the register marks. The parts of the designs to be in the various colours are marked for the guidance of the workman applying the plaster coatings, thus **B** for black, **R** for red, and so on. Sufficient key should again be left for the final coat, which may vary in thickness according to individual taste. It can now be seen that the finishing process remains in scratching through this last coat, within the enclosed



SUGGESTED TREATMENT
FOR
HALL & STAIRCASE.

lines, to the various coloured grounds below. The very limitations and nature of the craft compel directness, simplicity, and boldness, and, as the work must be executed *in situ*, the student is advised to make modest attempts at first, as was advised in commencing gesso work.

The whole of the foregoing processes, together with others, which space will not permit of mentioning, afford great possibilities, either used by themselves or in conjunction with each other, to the journeyman or master decorator, more especially as they are usually more remunerative, and with each new undertaking fresh difficulties will arise, yielding, when overcome, fresh results and an added pleasure in his calling.

In concluding this handbook, the writer would like to mention that, should any student or reader care to communicate with him, he would be only too pleased to assist them in their endeavours to attain to thorough craftsmanship, or to a greater love and pride in their work.

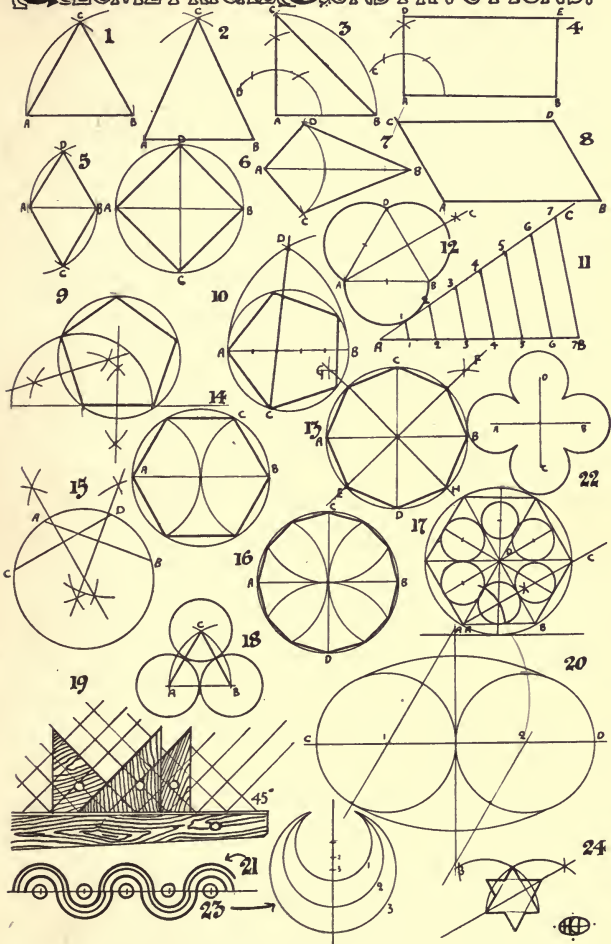
QUESTIONS BEARING ON CHAPTER XI.

1. Draw a simple stencil pattern of a flower sprig or border, to show in what way a stencilled ornament differs from a hand-painted ornament of similar pattern, and point out the differences. (1907.)
2. Describe briefly the different processes of stippling, badgering, scumbling, glazing, combing, and sanding, the tools used for the purpose, and the effect desired. State precautions to be taken in each case. (1907.)
3. How would you decorate Lincrusta or Anaglypta so as to produce the effect of old ivory upon a background of dark brown walnut? Name all pigments from which your colours would be made up. (1912.)
4. Make a drawing of the figure shown in Plate XXVI. Fig. 2, but enlarging it, so as to occupy a space twice as wide and three times as high as the copy. A neatly finished drawing is not required. (1912.)
5. Write a short account of the whole process of preparing and gilding a wood letter for outside use. State the materials you recommend and the time that should elapse between each part of the process. (1911.)

PLATE XXIX.

- Fig. 1. Equilateral Triangle Construction, point C, known as Apex.
" 2. Isosceles Triangle Construction.
" 3. Right-angled Triangle Construction, line CB, known as Hypotenuse.
" 4. Rectangle or Oblong Construction.
" 5. Rhombus Construction.
" 6. Square Construction, lines CD and AB, known as Diagonals.
" 7. Trapezium or Kite Construction.
" 8. Rhomboid Construction.
" 9. Showing how to Construct on a Given Base any Regular Polygon.
" 10. Showing how to Inscribe a Regular Polygon in a Circle.
" 11. To divide a line into number of Equal Parts, set off Equal Divisions on AC at any angle, and by method shown in Fig. 19, draw back to AB.
" 12. Trefoil Construction.
" 13. Quick Method of Constructing Octagon by dividing Angles.
" 14. Quick Method of Constructing Hexagon by using Radius.
" 15. Showing how to Inscribe Circles to pass through any Three Points.
" 16. Quick Method of Constructing a Dodecagon.
" 17. To place Circles in Regular Polygon.
" 18. Trefoil.
" 19. To Draw Parallel Lines by use of Set-square and Ruler.
" 20. Simple Method to Construct Form of Ellipse.
" 21. Showing use of Instruments to set out Ornament.
" 22. Quatrefoil.
" 23. To Construct Crescent.

GEOMETRICAL CONSTRUCTIONS.



APPENDIX I

n·alphabetical LIST OF DECORATIVE TERMS & THEIR MEANINGS. ❖

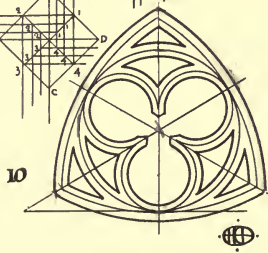
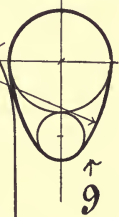
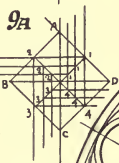
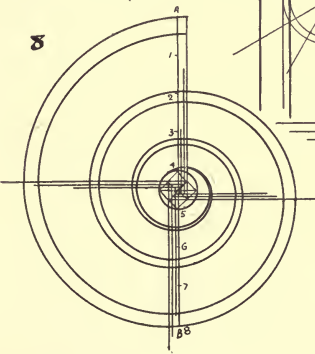
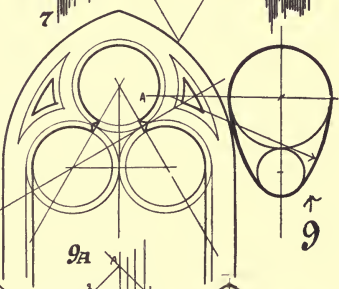
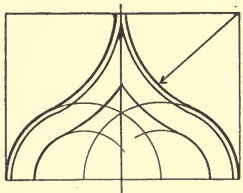
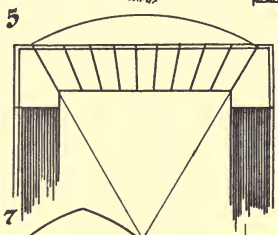
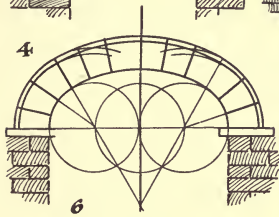
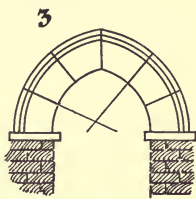
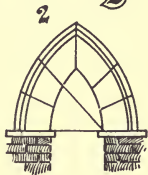
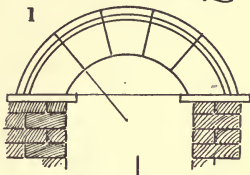
TERM.	PLATE.	FIG.	DEFINITION.
<i>Abacus</i>	32	1	The crowning member of the capital of a column, usually square in plan.
<i>Acanthus</i>	{ 33 27	{ 1, 2 4, 10	A decorative plant, much used in Grecian or Renaissance work.
<i>Alabaster</i>	.	.	A natural variety of calcium sulphate, which is soft, white, and generally translucent.
<i>A la grecque</i>	.	.	Architectural ornament resembling twisted ribbon.
<i>Alcove</i>	.	.	A recess in a room intended for a seat or a statue.
<i>Amorini</i>	27	6	Another name for Cupids.
<i>Amyl acetate</i>	.	.	A vehicle used in mixing imitation gold paints and certain film varnishes, possessing a smell similar to essence of pears.
<i>Angle shaft</i>	.	.	An architectural round moulding.
<i>Apse</i>	.	.	The semicircular or polygonal projecting portion of any building, but usually applied to a church.
<i>Aqua fortis</i>	.	.	Weak and impure nitric acid.
<i>Architrave</i>	32	1	The lowest portion of an entablature.
<i>Archivolt</i>	.	.	The under surface of an arch.
<i>Argent</i>	22	8	The white colour used in Heraldry to represent silver.
<i>Arris</i>	.	.	A sharp edge made by two surfaces intersecting each other.
<i>Ashlar</i>	.	.	Dressed square stones for building purposes.
<i>Astragal</i>	32	1	A small round moulding encircling the top or bottom of a column.
<i>Back putty</i>	.	.	Putty placed between a pane of glass and the rebate of the sash.

TERM.	PLATE.	FIG.	DEFINITION.
<i>Balcony</i> . . .	.	.	A projecting platform in front of a building, supported by columns or brackets.
<i>Baluster</i> . . .	.	.	Small column or pillar used in balustrading.
<i>Balustrade</i> . . .	.	.	A row of balusters connected with a top rail, and used for staircases, balconies, etc.
<i>Barge board</i> . . .	.	.	Gable board of a house.
<i>Batten</i> . . .	.	.	Piece of wood varying from 1 in. to 6 in. broad and up to 3 in. in thickness.
<i>Bolection moulding</i> . . .	.	.	A name given to any moulding and applied to a panel projecting from the framing.
<i>Boss</i> . . . 33	33	5	A circular-shaped ornament used to decorate ceilings, walls, and painting.
<i>Brest-summer</i> . . .	.	.	A horizontal beam supporting upper walls, etc.
<i>Buttress</i> . . .	.	.	A mass of masonry or brickwork projecting beyond a wall to impart additional strength.
<i>Caduceus</i> . . . 33	33	6	A winged rod with two serpents entwined, representing Mercury or flight.
<i>Cartouche</i> . . . 33	33	25	A decorative ornament in the form of a scroll.
<i>Chamfer</i> . . .	.	.	A bevelled edge or arris.
<i>Cinquefoil</i> . . .	.	.	An architectural ornament of five equal segments.
<i>Cipher</i> . . . 33	33	9	Any distinctive arrangement of initials or letters.
<i>Compo</i> . . .	.	.	A general term given to cement used to coat brickwork. An abbreviation of composition.
<i>Concave</i> . . .	.	.	A curved surface presenting a hollow surface on the exterior, as opposed to convex.
<i>Concentric circles</i> . . .	.	.	Circles having a common centre.
<i>Convex</i> . . .	.	.	A curved surface rising on the exterior, as opposed to concave.
<i>Cornucopia</i> . . . 33	33	10	Symbolic ornament representing the "horn of plenty."
<i>Corona</i> . . . 32	32	1	The lower member of a cornice, with a broad vertical surface, and often known as the "drip."
<i>Course</i> . . .	.	.	A continuous layer of bricks or stones throughout the whole length of a wall.
<i>Cross</i> . . . 33	33	11-15	Symbol of Christian art, symbolising the person of Christ, Christianity, and Sacrifice.
<i>Dado</i> . . . 32	32	3	The lower part of a wall space.
<i>Damp course</i> . . . 32	32	3	A layer of material at the base of a wall, between the courses of brick or stone, to prevent the danger of damp coming up from the ground. Lead, cement, slate, or tarred cloth are used for this purpose.

PLATE XXX.

- Fig. 1. Segmental Arch (Joints spring from Centre).
„ 2. Equilateral on Lancet Arch (Construction shown).
„ 3. Obtused Pointed Arch (Construction shown).
„ 4. Semi-elliptical Arch (Construction shown).
„ 5. Flat Arch (Construction shown).
„ 6. Ogee Arch (Construction shown).
„ 7. Trefoil.
„ 8. Ionic Volute (with Method of Construction shown in 9a).
„ 9. Oval (showing Method of Construction).
„ 10. A Trefoil within a Circle within a Spherical Triangle.

SOME MORE GEOMETRY.



TERM.	PLATE.	FIG.	DEFINITION.
<i>Dentils</i>	32	2	Small cubes or blocks used to ornament cornices.
<i>Diaper</i>	23	5	An ornamental pattern, either flat or in low relief, repeated on a wall surface.
<i>Dormer window</i>	.	.	A vertical window in a sloping roof.
<i>Dovetail</i>	.	.	A mode of joining together timber, the overlapping ends being cut in the form of the outspread tail of a dove.
<i>Dowel</i>	.	.	A pin of iron, stone, or wood to hold together contiguous blocks of timber or stone.
<i>Dripstone</i>	.	.	A projecting moulding intended to carry off the rain.
<i>Eaves</i>	.	.	The lower projecting portions of a sloping roof.
<i>Echinus</i>	32	6	The egg-shaped moulding with the egg-and-dart ornament used in the Doric capital.
<i>Engrailed</i>	.	.	Heraldic term to denote an edge indented.
<i>Entablature</i>	32	1	In classical architecture the superstructure resting on the capitals of columns and comprising the architrave, frieze, and cornice.
<i>Escutcheon</i>	.	.	Shield placed round keyhole opening.
<i>Finial</i>	33	21	Decorative termination to a bench or pew end or a pinnacle on a roof.
<i>Finger-plate</i> (See Fig. in Chap. VIII.)			A plate fixed on the outer style of a door above and below the handle. This should be washable, as its purpose is to protect the paint.
<i>Flash-point</i>	.	.	The temperature at which the vapour of oils, spirit, or other inflammable liquid will ignite.
<i>Fret</i>	25	1, 2, 3, etc.	An ornament formed of lines variously combined, but usually interlaced or arranged in rectangular form.
<i>Fylfot</i>	.	.	Rectangular cross, with arms bent at right angles and of equal length.
<i>Gable</i>	.	.	The pointed or triangular end portion of a building.
<i>Garret</i>	.	.	The uppermost apartment of a house.
<i>Grotesque ornament</i>	27	1	Ludicrous, fanciful, or absurd ornament.
<i>Guilloche</i>	25	19, 20	Ornament consisting of undulating lines arranged parallel to each other and interlacing.
<i>Heraldic colours</i>	22	.	Gule red, or gold, argent silver, vert green, azure blue, sable black.

TERM.	PLATE.	FIG.	DEFINITION.
<i>Hip-roof</i>	.	.	A hipped roof is a roof which slopes towards the ends as well as the sides. It is formed of three or four intersecting planers.
<i>Indian ink</i>	.	.	A jet-black ink used by process artists and designers.
<i>Jamb</i>	.	.	Side of window or door, or opening in a wall.
<i>Kicking-plate</i>	.	.	Metal plate fixed to bottom rail of a door.
<i>King-post</i>	.	.	Central post supporting ridge of roof where the main rafters meet it.
<i>Ledged door</i>	.	.	A door made of boards in an upright position united by cross-pieces or ledges.
<i>Lintel</i>	.	.	The horizontal portion of a door or window resting on the uprights.
<i>Lock-rail</i>	(See Fig. in Chap. VIII.)	.	The rail in a door to which the lock is fixed.
<i>Lozenge shape</i>	.	.	Known also as diamond shape or rhombus, possessing four equal sides, the two pairs of opposite angles being acute and obtuse respectively.
<i>Mahlstick</i>	4	23	A "rest" stick used by sign-writers to steady the hand while writing.
<i>Meander</i>	33	18	Ornament possessing a winding or flowing movement.
<i>Modillion</i>	.	.	A carved wooden or stone block used under cornices of buildings.
<i>Monogram</i>	33	19	A character composed of one, two, or three letters of a name, interwoven so as to form a recognisable device.
<i>Mortise</i>	.	.	A joint made by cutting a hole in one piece of material to receive a similar projecting piece, called a tenon.
<i>Muller</i>	33	20	A pestle used in grinding paint.
<i>Mullion</i>	32	10	Upright division to separate the window into different numbers of lights.
<i>Mural decoration</i>	.	.	Wall decoration.
<i>Muranese</i>	.	.	Kind of obscured glass.
<i>Nimbus</i>	33	4	Another name for "halo" or ring, representing a circle of light.
<i>Ogee</i>	32	5	A moulding resembling in profile the letter S.
<i>Oval</i>	29	9	Resembling the outline of an egg.
<i>Palette</i>	4	12	A board on which pigments are mixed.

TERM.	PLATE.	FIG.	DEFINITION.
<i>Panel</i>	(See Fig. in Chap. VIII.)		A sunk area or enclosed shape.
<i>Parian cement</i>	.	.	White cement prepared from borax and plaster of Paris.
<i>Patera</i>	26	4	An architectural ornament circular in shape.
<i>Pediment</i>	33	24	The triangular mass above the entablature of the ends of buildings, and resembling a gable.
<i>Plan</i>	(See Fig. in Chap. X.)		A view of any object looked at from above.
<i>Plinth</i>	32	1	The square base of a column.
<i>Poppy-head</i>	33	17, 21	Carved ornament at the end of a pew or seat.
<i>Protractor</i>	.	.	An instrument used to measure angles.
<i>Putlog</i>	.	.	Short piece of timber inserted in walls to carry a scaffold.
<i>Ramp</i>	.	.	A concave slope or rise, uniting the lower and higher portions of any work, such as borders on staircases, etc.
<i>Rebate</i>	.	.	A narrow recess along the edge or across the end of stone, wood, or other material.
<i>Ridge-tile</i>	.	.	A tile covering the angle of the sloping sides of a roof.
<i>Rise</i>	(See Fig. in Chap. VIII.)		The vertical face of a stair step.
<i>Sash</i>	.	.	The framed portion of a window which receives glass.
<i>Scroll</i>	26	1	Decorative ornament of a spiral growth.
<i>Sill</i>	.	.	The basement of a door or window, or horizontal piece of timber or stone, on which a structure rests.
<i>Skirting</i>	32	3	Vertical board placed round the lowest portion of a wall.
<i>Soffit</i>	.	.	The lower surface of an arch or underside of an overhanging cornice.
<i>Spandrel</i>	.	.	The triangular shapes made between the curves of arches and the rectangular line above it.
<i>Stanchion</i>	.	.	A support or prop of either timber or iron.
<i>Stele</i>	26	5	A small slab used in sepulchral monuments.
<i>String course</i>	.	.	A slightly projecting narrow moulding carried round the face of a wall.
<i>Swag</i>	33	16	A suspending ornamental form, either of cloth, fruit, or flowers.
<i>Symmetry</i>	26	2	Corresponding likeness on either side of a centre line.

TERM.	PLATE.	FIG.	DEFINITION.
<i>Template</i> . . .	.	.	Pattern or guide for working mouldings, etc., usually cut in zinc or thin board.
<i>Tooth ornament</i> . . .	.	.	Known also as "dog-tooth" or "nail-head" ornament; used largely in Early English period of architecture.
<i>Trident</i> . 33	33	23	A three-pronged sceptre, symbolical of Neptune, the god of the sea.
<i>Volute</i> . 29	29	8	A spiral scroll, characteristic of the Ionic, Composite, or Corinthian capitals.
<i>Weather-board</i> . . .	.	.	Boards so arranged by overlapping each other as to prevent entrance of snow or rain.

APPENDIX II

USEFUL TABLES AND INFORMATION . . . . .	136

Roman Numerals.

1	.	.	.	I	20	.	.	XX
2	.	.	.	II	45	.	.	XLV
3	.	.	.	III	50	.	.	L
4	.	.	.	IV	90	.	.	XC
5	.	.	.	V	100	.	.	C
6	.	.	.	VI	400	.	.	CD
7	.	.	.	VII	500	.	.	D
8	.	.	.	VIII	900	.	.	CM
9	.	.	.	IX	1000	.	.	M
10	.	.	.	X	1916	.	.	MDCDXVI

Note.—1000 is also expressed by T.

Land or Square Measure.

144 sq. in. (<i>i.e.</i> 12 × 12)	.	.	.	1 sq. ft.
9 „ ft. („ 3 × 3)	.	.	.	1 „ yd.
30 $\frac{1}{4}$ „ yd. („ 5 $\frac{1}{2}$ × 5 $\frac{1}{2}$)	.	.	.	1 rod, pole, or perch.
40 rods, poles, or perches	.	.	.	1 rood.
4 roods or 4840 sq. yd.	.	.	.	1 acre.
640 acres	.	.	.	1 sq. mile.

This measure is used for all of the following :—Painting, Plastering, Flooring, Plumbing, Tiling, and Glazing.

Sizes of Drawing Paper.

	Dimensions.
Emperor	72 × 48
Antiquarian	53 × 31
Double Elephant	40 × 26 $\frac{3}{4}$
Atlas	34 × 26
Imperial	30 × 22
Elephant	28 × 23
Half Imperial	22 × 15

Glass Weight.

5 lb make 1 stone.
120 lb., or 24 stone, make 1 seam.

Metric Weights and Measures.

		Linear Measure.			
		Yds.	Ft.	Ins.	
10 millimetres	or	0	0	0'3937	= 1 centimetre.
10 centimetres	"	0	0	3'9370	= 1 decimetre.
10 decimetres	"	1	0	3'3708	= 1 metre.
10 metres	"	10	2	9'7079	= 1 decametre.
10 decametres	"	109	1	1'079	= 1 hectometre.
10 hectometres	"	1093	1	10'79	= 1 kilometre.

Mathematical Signs.

D or d	stands for	denarii or pence.	
S „ s	„	solidi „ shillings.	
ℒ „ l	„	libra „ pounds.	
+	plus,	the sign of addition,	e.g. $3 + 4 = 7$.
—	minus,	„ subtraction,	„ $7 - 4 = 3$.
×	multiply,	„ multiplication,	„ $7 \times 3 = 21$.
÷	divided by,	„ division,	„ $21 \div 3 = 7$.
=	equals,	„ equality,	„ $3 + 4 = 7$.
∴	denotes the word	“therefore.”	
∵	„	“because.”	
⊥	stands for	“perpendicular to.”	
∥	„	“parallel to.”	
∠	„	“angle.”	
⊙	„	“circle.”	
~	„	“difference between.”	
R°	„	radius expressed in degrees.	
R'	„	feet	} e.g. 10' 10" = 10 ft. 10 in.
R"	„	inches	

Avoirdupois Weight.

16 drams	make	1 ounce (oz.).
16 ounces	„	1 pound (lb.).
14 lb.	„	1 stone (st.).
28 lb.	„	1 quarter (qr.).
4 qr. or 112 lb.	„	1 hundredweight (cwt.).
20 cwt.	„	1 ton.

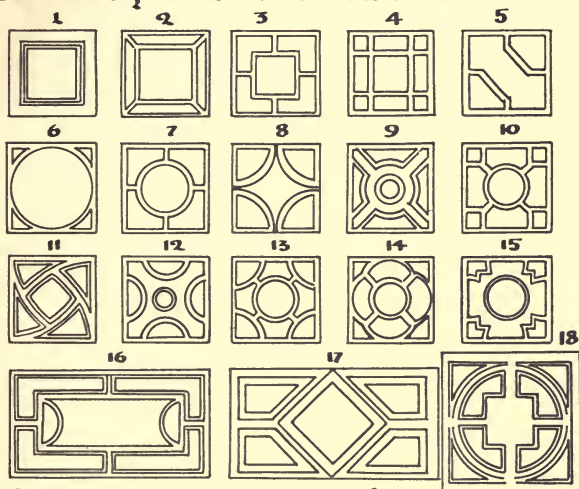
Linear Measure (English).

12 inches	make	1 foot.
3 feet	„	1 yard.
5½ yards	„	1 rod, pole, or perch.
40 poles	„	1 furlong.
8 furlongs (1760 yds.)	„	1 mile.
3 miles	„	1 league.

PLATE XXXI.

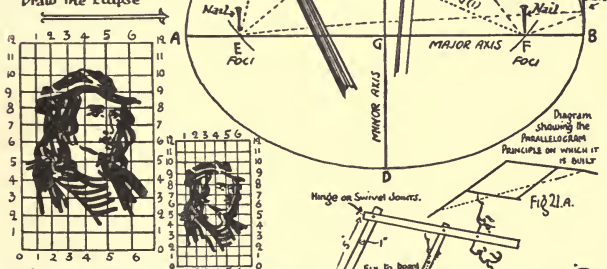
- Figs. 1-15 and 18. Showing various Methods of Setting Square
Form of Ceiling.
- „ 16 and 17. For Rectangular Ceilings or Panels.
- Fig. 19. Easy Method to Set-out Ellipse by String.
- „ 20. Easy Method to Enlarge or Reduce Drawings or
Diagrams.
- „ 21. Dimensions for a Pantograph.

SETTING-OUT OF CEILINGS.



EASY METHOD TO SET OUT ELLIPSE.

To obtain foci E & F, take distance AG or GB & From C or D cut A-B. Fasten Nails in E & F, tie length of String on them equal in length to EB plus BF & with Brush, Chalk or Pencil Draw The Ellipse



Simple Method of Enlarging Drawings
(by Dividing into Squares.)

Fig 20

Fig 21 The Pantograph: To enlarge or reduce drawings

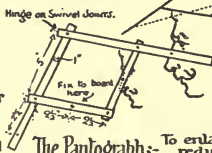


Table for Wall-papering.

To ascertain the required number of pieces of paper to use for a room of any given size. Measurement in feet round the walls, including doors, windows, etc., and then refer to the following table:—

Height from Cornice to Skirting in feet.	feet 28	pieces	feet 32	pieces	feet 36	pieces	feet 40	pieces	feet 44	pieces	feet 48	pieces	feet 52	pieces	feet 56	pieces	feet 60	pieces	feet 64	pieces	feet 68	pieces	feet 72	pieces	feet 76	pieces	feet 80	pieces	feet 84	pieces	feet 88	pieces	feet 92	pieces	feet 96	100 feet round the Room.			
From 7 to 7½ feet	4	4	4	5	5	6	6	7	7	8	8	9	9	9	9	9	10	10	10	11	11	11	12	12	12	13	13	13	14	14	15	15	16	16	17	17	18	18	12 pieces of paper
" 7½ " 8 "	4	4	4	5	5	6	6	7	7	8	8	9	9	9	9	10	10	11	11	12	12	12	13	13	13	14	14	15	15	16	16	17	17	18	18	"	"		
" 8 " 8½ "	4	5	5	6	6	7	7	8	8	9	9	10	10	10	10	11	11	12	12	13	13	13	14	14	15	15	16	16	17	17	18	18	18	18	"	"			
" 8½ " 9 "	4	5	5	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	14	15	15	16	16	17	17	18	18	18	18	18	18	18	"	"			
" 9 " 9½ "	4	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	14	15	15	16	16	17	17	18	18	18	18	18	18	18	"	"			
" 9½ " 10 "	5	5	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	14	15	15	16	16	17	17	18	18	18	18	18	18	18	18	"	"			
" 10 " 10½ "	5	5	6	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	14	15	15	16	16	17	17	18	18	18	18	18	18	18	18	18	"	"			
" 10½ " 11 "	5	6	7	7	8	8	9	9	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18	18	18	18	18	18	18	18	18	18	"	"			
" 11 " 11½ "	5	6	7	8	8	9	9	10	10	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18	18	18	18	18	18	18	18	18	18	18	"	"			

How to use the Table.—Ascertain the height of the room, then the nearest figure to the measurement round the room given in the top line of the table. Underneath the figures giving the number of feet round the room will be found the number of pieces of English wall paper required, *e.g.*, a room measuring 76 feet round the walls, and not over 11 feet between cornice and skirting, would require 13 pieces.

Note.—All doors and windows should be included in measuring round the walls.

APPENDIX III



LIST OF BOOKS SUITABLE FOR REFERENCE . . . . .	141

- | | |
|--|---|
| <p>“Practical House Painting.”
By John Elliott. 1s.</p> <p>“Painting and Decorating.”
By W. J. Pearce. 12s. 6d.</p> <p>“The Painters’ Pocket-
Book.” By A. Seymour
Jennings. 3s.</p> <p>“The Theory of Colour.” By G. H.
Hurst, F.C.S. 7s. 6d.</p> <p>“Painters’ Colours, Oils, and Varnishes.”
By G. H. Hurst, F.C.S. 12s. 6d.</p> <p>“Paint and Painting Defects.” By J. Cruikshank Smith, B.Sc. 3s.</p> <p>“Pigments, Paint, and Painting.” By G. Terry. 7s. 6d.</p> <p>“Cassell’s House Decoration.” Edited by Paul Hasluck.</p> <p>“Meyer’s Handbook of Ornament.” Published by Batsford. 12s. 6d.</p> <p>“Rhead’s Principles of Design.” Published by Batsford. 6s.</p> <p>“A Manual of Historic Ornament.” By Richard Glazier. 10s. 6d.</p> <p>“Dictionary of Terms in Art.” By F. W. Fairholt. 3s. 6d.</p> <p>“Design.” By R. G. Hatton. 5s.</p> <p>“Original Alphabets.” By W. J. Pearce. 4s. 6d. the set.</p> <p>“Lettering in Ornament.” By Lewis F. Day. 5s.</p> <p>“Nature in Ornament.” By Lewis F. Day. 5s.</p> <p>“The Roman Alphabet.” By Woolecroft Rhead. 2s. 6d. the set.</p> <p>“Church Decoration.” 5s.</p> <p>“The Drawing-Room.” 3s. 6d.</p> <p>“The Dining-Room.” 3s. 6d.</p> <p>“Practical Geometry.” By — Carroll. 1s. 6d.</p> <p>“Graining.” By William E. Wall. 12s.</p> <p>“Year-Book of Decorative Art.” Published by the Studio Offices.
5s. annually.</p> | <p style="font-size: 3em; line-height: 1;">}</p> <p style="text-align: right;">Specially
recommended.</p> |
|--|---|
- Or in one volume, 10s. Published by
the Journal of Decorative Art.

The following magazines should be subscribed to :—

- “The Decorator” (noted for its Answers to Correspondents).
6d. per month, 5s. per year, including diary.
- “The Journal of Decorative Art.”
6d. per month, 7s. per year.
- “The Decorators’ and Painters’ Magazine.”
6d. per month, 5s. per year.

Also invaluable for general Decorative Work :—

- “The Studio.” 1s. per month.

The student is advised to send to the following firms for their complete lists of Practical Handbooks in Trade and Allied Subjects :—

The Trade Papers Publishing Company Ltd.,
365 Birkbeck Bank Chambers,
High Holborn,
London, W.C.

A. M. Sutherland,
26 Oxford Road, C.-on-M.,
Manchester.

Dale, Reynolds & Company Ltd.,
46 Cannon Street,
London, E.C.

B. T. Batsford,
Art Publisher,
94 High Holborn,
London, W.C.

“The Report of the Departmental Committee appointed to Investigate the Danger attendant on the use of Paints containing Lead in the Paintings of Buildings,” which can be obtained from H.M. Stationary Office at 1s. 2d., should be carefully studied, as it contains much valuable information.

The City and Guilds of London Institute, Department of Technology.

“Report” and “Programme” can be obtained from John Murray, Albemarle Street, London, W., at 9d. each, and are published annually.

APPENDIX IV

FOR the information of students who desire to enter for the examinations of the City and Guilds of London Institute in painters' and decorators' work, a set of both Preliminary and Ordinary Grade Papers are given. No practical work is asked for in Grade I. In the Ordinary and Final Grades the examination is divided into two parts—theoretical and practical—two months being given, as a rule, to the student for the latter to prepare two or more panels.

[SPECIMEN]

PRELIMINARY GRADE PAPER

Three hours allowed, and student must attempt Questions Nos. 1 and 2, and not more than 7 others.

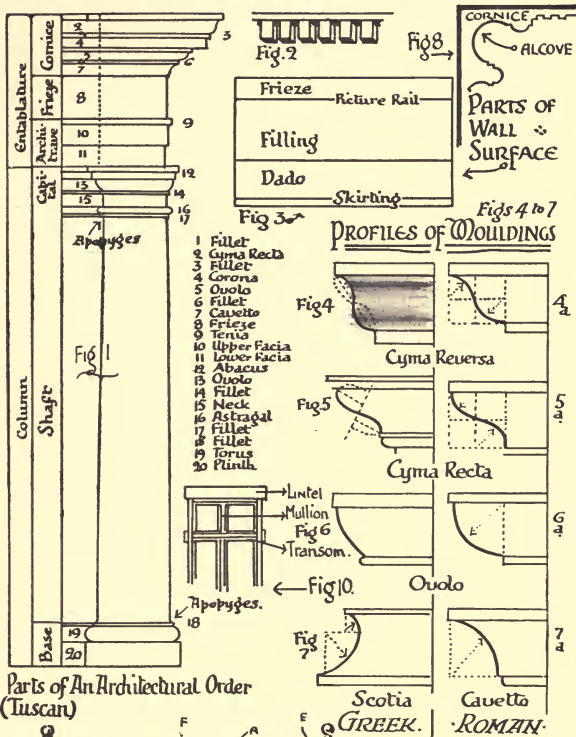
1. Show by a sketch the meaning of the terms : "plan," "elevation," "transverse section," and "longitudinal section." Draw a plain scale of $\frac{3}{4}$ in. to 1 ft. Sketch a pair of dividers in such a position that the points indicate on the scale a distance of 2 ft. 4 in.
2. What are duodecimals? Give an example showing how you would ascertain the number of superficial yards contained in the walls of a room 20 ft. 3 in. by 17 ft. 9 in. and 9 ft. 8 in. high, also the number of yards in the ceiling. Disregard the window and door openings.
3. What is the principal object of painting (*a*) iron, (*b*) fibrous plaster? How should paint be mixed and applied in order to ensure that the several coats shall adhere to the surface and to each other?
4. Describe how you would mix the following colours, using white lead in each case as the base :—French grey, sky blue, flesh colour? Mention all the ingredients you would use, and how you would deal with the paint before applying it.
5. A pound brush used for the application of white lead paint has been laid aside uncleaned for several months. State how you would proceed to render it fit for use.
6. Name four pigments of different classes used in paint, and state briefly their good qualities and their shortcomings, if any.

PLATE XXXII.

Fig. 1. Parts of an Architectural Order.

- „ 2. Dentils.
- „ 3. Parts of Wall Surface.
- „ 4. Greek Cyma Reversa Moulding, and in Fig. 4a Roman Version.
- „ 5. Greek Cyma Recta Moulding, and in Fig. 5a Roman Version.
- „ 6. Greek Ovolo Moulding, and in Fig. 6a Roman Version.
- „ 7. Greek Scotia Moulding.
- „ 8. Roman Cavetto Moulding.
- „ 9. Parts of a Shop Front as known to the Decorator.

IMPORTANT DIVISIONS & MOULDINGS.



PARTS OF A SHOPFRONT. Fig 9.

- A Cornice
- B Truss
- C Capital
- D Pilaster
- E Fascia
- F Fanlight
- G Plinth

What are the conditions necessary to ensure oil paint drying properly? How long should it take to dry dust-proof under favourable conditions?

7. What are the constituents of (a) a good quality glazing putty, (b) hard surfacing filler?
8. State the constituent parts of a good priming for (a) pine; (b) yellow deal; (c) American whitewood; (d) pitch-pine; (e) old plaster work; (f) sheet-iron roofing.
9. A ceiling which is to be finished in distemper is found to have varying degrees of porosity owing to various kinds of plasters having been used at different times for repairs which are chiefly patches of fair size. How would you treat it to ensure the distemping being satisfactory?
10. Describe how you would mix paperhangers' paste. What considerations would guide you in hanging a frieze and filling of well-defined pattern?
11. How would you mix the ground colours for pollard oak, satin-wood, mahogany, and black and gold marble?
12. Show by a sketch how you would space the word WOOLLY LLAMA in Roman and Script letters.
13. For what purpose are stencils used? Describe the materials of which they are made, the tools used in their production, and the principal points to be observed in designing and cutting them.
14. What are the principal points to be studied in the application of (a) paint and (b) varnish in order in each case to ensure a satisfactory and durable surface?

[SPECIMEN]

ORDINARY GRADE PAPER (1914)

Practical Portion.—Time allowed, two months. The candidate is to prepare two examples of his work from the following instructions, but he must *not* attempt more than two, which may be either of the following pairs :—Nos. 1 and 2, Nos. 3 and 4, or Nos. 5 and 6. The maximum number of marks for each group of exercises is the same.

General Note.—All painting work is to be commenced from the "white," and is to be knotted, primed, and painted four coats. The filling is to be a Japan filler applied with the knife.

Exercises Nos. 2 to 5 inclusive to be done upon framed and moulded wood panels; size, including styles and rails, 42 in. by 21 in. Exercises Nos. 1, 6, and the imitation marbles (No. 3) on 3-ply board, asbestos millboard, or other suitable rigid material; size not exceeding 42 in. by 21 in.

1. On a black panel, twice varnished, write in 2-in. gold letters to sample :

“Shun idleness ; it is the rust that attaches itself to the most brilliant metal.”

VOLTAIRE.

It is important that the form of sample letter be carefully studied, and that the panel be varnished before writing.

A B C D E F G H I
J K L M N O P Q
R S T U V W X Y Z
1 2 3 4 5 6 7 8 9 0

2. After painting a panel four coats give a finishing coat in any white enamel, the white being slightly broken to accord with the walls of a room which are champagne colour.
3. On two panels give examples of (a) medium oak, combed and rolled, once varnished ; (b) rich dark mahogany effect, brush-grained, and showing pores. Glazing is admissible, but not over-graining. The panels to be twice varnished.
Imitate the following polished marbles as a slab :—Sienna panel, with 4½-in. marginal border black and gold.
4. Finish panel in rich browns suitable for use when “Tuscan” Eltonbury silk fibre has been selected for covering the walls. Finish the panel and mouldings semi-gloss ; twice varnish styles and rails.
5. A room is required for the display of a considerable quantity of blue Delft china ; the walls are to be finished plain in a cool

PLATE XXXIII.

- Fig. 1. Acanthus Foliage.
" 2. Acanthus Foliage.
" 3. Paschal Lamb or Agnus Dei.
" 4. Nimbus or Halo.
" 5. Boss.
" 6. Caduceus (symbolic of Flight).
" 7. Embattlement.
" 8. Chevron.
" 9. Cipher.
" 10. Cornucopia (symbolic of Plenty and Peace).
" 11. Latin Cross.
" 12. Cross of St Andrew and St Patrick.
" 13. Egyptian Cross.
" 14. Maltese Cross.
" 15. Cross Potent.
" 16. Festoon.
" 17. Finial.
" 18. Meandering Ornament.
" 19. Monogram HGD.
" 20. Muller.
" 21. Crocket.
" 22. Interlaced Ornament (Fret).
" 23. Trident (symbolic of Sea and Father Neptune).
" 24. Tympanum.
" 25. Cartouche.
" 26. Ribband.
" 27. Imbrication.

TERMS IN ART. (Illustrations)

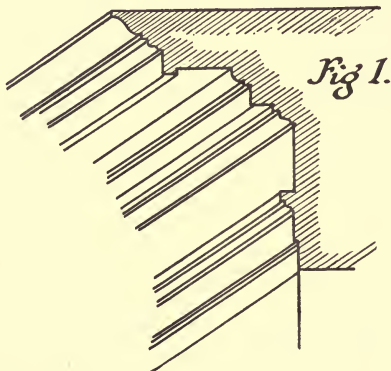


ivory tone. Paint the panel in greys and ivory, and introduce suitable stencil ornament. For the finish of the woodwork give various paint finishes.

6. Select an ornament in Lincrusta, Anaglypta, or Tynecastle; metal and lacquer same in colours so as to render the ornament suitable for use, with a plain deep frieze of ivory ground above a neutral-coloured wall or woodwork. Size not to exceed 42 in. by 21 in.

Theoretical Portion (1914).—All candidates must attempt Questions 1, 2, and 3, and not more than 7 others. A piece of drawing paper to be given to each candidate, and drawing instruments may be used.

1. Make a sketch showing the construction of an ellipse 2 in. by $1\frac{1}{2}$ in. How would you draw a true ellipse 4 ft. by 2 ft. 9 in. full size on a wall? Show details of working, and give the approximate area.
2. Fig. 1 is a section of a plaster cornice to be used in a large public hall, the walls of which are to be finished in two olive-greens, the ceiling being a light biscuit colour. Copy the outline, and mark each section *a*, *b*, *c*, etc. Give the colour which you would use for each section so as to produce a pleasing effect. Gold may be used if desired.



3. A spire is in the form of a regular hexagonal pyramid, and measures 12 ft. 6 in. from its apex to the centre of the base of one side; the side is 3 ft. long. Find the cost of double gilding the spire at 12s. 6d. per ft. super, and state the number of books of gold-leaf required.

4. The woodwork of a hospital ward is pitch-pine, and the ceiling and walls are plastered. How would you treat the ceiling, walls, and woodwork? Give particulars of the finishes, and suggest the colouring which would be most suitable.
5. (a) Why does colour when on the bench or applied to a wall appear much lighter than the same colour when applied on a ceiling? (b) What is the reason that comparatively strong colours are generally advisable for the background of high reliefs as against pale tones? (c) What is the difference between "colour analogy" and "self-colours"?
6. The following tools are returned in a neglected condition to the shop after the completion of a job :—dusters, fitches, sash tools, writing pencils, varnish brushes, stipplers, and tar brushes. State how you would deal with each (a) if they were to be used again on the following Monday morning; (b) if they were not likely to be used again for some weeks.
7. What are driers? Give examples, and state the result of using too large a quantity of driers in paint. Describe in detail how you would test the quality of white enamel (glossy). Name the principal qualities for which you would test.
8. An approved grey tint is obtained by admixture of white, blue, yellow, and red; French ultramarine is the blue used. Name the remaining pigments which may be used to ensure purity of tint and permanency.
9. What would you use to give an acid-resisting coat (colour immaterial) to a wooden vessel which is to contain a 10 per cent. solution of sulphuric acid? What description of paint would you use for a stable to be finished in a light tint?
10. The entrance door of a large house is badly blistered. Describe exactly how you would prepare and execute the repainting in plain colours and varnishing. The finish to be as nearly flat as can be produced without affecting the durability, which is of prime importance.
11. What are meant by the terms: blooming, cissing, wrinkling, tackiness, sheary, livering, chalking? Where these terms refer to defects in painters' work or materials, explain how they are caused, and suggest a remedy in each case.
12. (a) Name six coloured pigments which can be used with safety on a newly plastered wall; (b) why do paints containing linseed oil usually fail on such surfaces?
13. Draw to scale of $\frac{1}{2}$ in. to 1 ft. a scroll or ribbon about 8 ft. long and 2 ft. wide, and set out on it the words "**KINEMA HALL.**" Style optional.
14. What is meant by drying? Illustrate your answer by reference to the drying of an oil paint, an oil varnish, a spirit varnish, and a distemper respectively.



PRINTED BY THE EDINBURGH PRESS
9 AND 11 YOUNG STREET
EDINBURGH, SCOTLAND



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